

PV-136P

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SERVICE MANUAL



PV4541P

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PRODUCT SAFETY SERVICING GUIDELINES FOR COLOR TELEVISION RECEIVERS

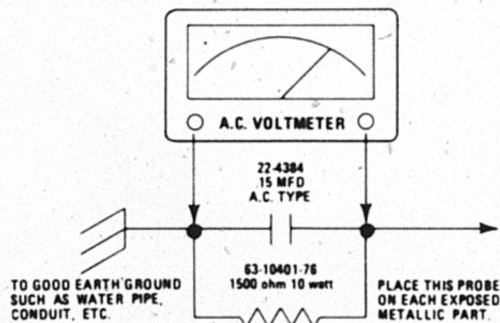
CAUTION: No modification of any circuit should be attempted. Service work should be performed only after you are thoroughly familiar with all of the following safety checks and servicing guidelines. To do otherwise increases the risk of potential hazards and injury to the user.

SAFETY CHECKS

After the original service problem has been corrected, a check should be made of the following:

SUBJECT: FIRE & SHOCK HAZARD

1. Be sure that all components are positioned in such a way as to avoid possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the repair shop.
2. Never release a repair unless all protective devices such as insulators, barriers, covers, shields, strain reliefs, and other hardware have been reinstalled per original design.
3. Soldering must be inspected to discover possible cold solder joints, frayed leads, damaged insulation (including AC cord), solder splashes or sharp solder points. Be certain to remove all loose foreign particles.
4. Check the "across-the-line" capacitor and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces must be avoided.
6. All critical components (shaded on the schematic diagram and parts lists) such as fuses, flameproof resistors, capacitors, etc. must be replaced with exact Zenith types. Do not use replacement components other than those specified or make unrecommended circuit modifications.
7. After re-assembly of the set always perform an AC leakage test on all exposed metallic parts of the cabinet, (the channel selector knobs, antenna terminals, handle and screws) to be sure the set is safe to operate without danger of electrical shock. **DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST.** Use an AC voltmeter, having 5000 ohms per volt or more sensitivity, in the following manner; Connect a 1500 ohm 10 watt resistor (63-10401-76), paralleled by a .15 mfd. 150V AC type capacitor (22-4384) between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination 1500 ohm resistor and .15 mfd. capacitor. Reverse the AC plug and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed .75 volts RMS. This corresponds to 0.5 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



SUBJECT: IMPLOSION

1. All Zenith picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage during installation. Avoid scratching the tube.
2. Use only recommended Zenith replacement tubes.

SUBJECT: X-RADIATION

1. Be sure procedures and instructions to all service personnel cover the subject of X-radiation. The only potential source of X-rays in current TV receivers is the picture tube. However, this tube does not emit X-rays when the H.V. is at the factory specified level. It is only when the H.V. is excessive that X-radiation may be generated. Refer

to the X-ray Precaution Label which is located inside each television receiver for the correct high voltage. The proper value is also given in the applicable service manual. Operation at higher voltages may cause a failure of the picture tube or high voltage supply and, under certain circumstances, may produce radiation in excess of desirable levels.

2. Only Zenith specified CRT anode connectors must be used. The degaussing shield also serves as an X-ray shield in color sets, do not defeat its purpose.
3. It is essential that the serviceman has available an accurate and reliable high voltage meter. The calibration of the meter should be checked periodically against a reference standard, such as the one available at your distributor.
4. When the high voltage circuitry is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be run up and down while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly. We suggest that you and your service organization review test procedures so that voltage regulation is always checked as a standard servicing procedure, and that the high voltage reading be recorded on each customer's invoice.
5. When trouble shooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage compartment. Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.
6. Color solid-state sets manufactured after June, 1973 ("E" Line and later), use new type picture tubes specifically designed to withstand higher operating voltages without causing excessive X-radiation. It is strongly recommended that the C.R.T. shop fixture be equipped with the new type tube. Addition of a permanently connected H.V. meter to the H.V. anode of the shop C.R.T. fixture is advisable. The C.R.T.'s in these sets should never be replaced with any other tube types as that may result in excessive X-radiation and possible violation of the law.
7. Starting with late production "E" line color sets, a special four lead damper capacitor was used. Its feature, the interlocking four leads, should not be defeated. However, each time one of these sets is serviced, for whatever reason, the part number of the capacitor should be examined. If it is the 22-7233 type (used in "E" and "F" model lines only), that capacitor must be replaced with an improved recommended type (22-7504-01). Please refer to Zenith Tech Topics (Issue No. 87) for the details. Your distributor will answer any questions, or you may write to Zenith for further details.

SUBJECT: TIPS ON PROPER INSTALLATION

1. Never install any receiver in a closed-in recess, cubbyhole or closely fitting shelf space.
2. Never install a receiver over, or close to a heat duct, or in the path of heated air flow.
3. Avoid conditions of high humidity such as; outdoor patio installations where dew is a factor, near steam radiators where steam leakage is a factor, etc.
4. Avoid placement where draperies may obstruct rear venting. The customer should also avoid the use of decorative scarves or other coverings which might obstruct ventilation.
5. Wall and shelf mounted installations using a commercial mounting kit, must follow the factory approved mounting instructions.
6. A receiver mounted to a shelf or platform must retain its original feet (or the equivalent thickness in spacers) to provide adequate air flow across the bottom. Bolts or screws used for fasteners must not touch any parts or wiring. Perform leakage tests on customized installations.
7. Caution customers against the mounting of a receiver on a sloping shelf or in a tilted position, unless the receiver is properly secured.
8. A receiver in a roll-about cart should be stable in its mounting to the cart. Caution the customer on the hazards of trying to roll a cart with small casters across thresholds or deep pile carpets.
9. Caution customers against the use of a cart or stand which has not been listed by Underwriters Laboratories, Inc. for use with their specific model of television receiver.



PV4541P

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GENERAL INFORMATION

The PV4541 is a fixed rear screen, 45 inch picture diagonal, projection television receiver. High definition, liquid cooled, projection tubes are used to provide a bright, high resolution, self converged picture display. Optical coupling is used between the projection tubes and the projection optics for display contrast enhancement. A screen with high gain-contrast and extended viewer acceptance angle is utilized. Fault mode sensing and electronic shut down circuits are provided to protect the receiver in the event of conceivable fault modes. All of Zenith's system features such as computer space command, remote control, quartz controlled electronic tuning, on-screen channel number and time display, etc. are provided. A variety of external input provisions are made to accommodate VCR, separate tuner, video games, cable, and any other NTSC composite video source which the viewer may want to display.

PV4541P SYSTEM DETAILS

Optics—The PV4541 uses three USPL (U.S. Precision Lens) Compact Delta 7 lenses. This is a new lens design by USPL that incorporates a light path fold or bend within the lens assembly. This is done with a front surfaced mirror with a light path bend angle of 72 degrees. Because of this light path bend, the outward appearance of the lens resembles, somewhat, that of the upper section of a periscope. Figure 1 shows a profile drawing of the Delta 7 assembly. The lens elements and the mirror are mounted in a plastic housing. Optical focusing is accomplished by rotating a focus handle with wing nut lock provisions. Rotation of the focus handle changes the longitudinal position of the lens' "B" element.

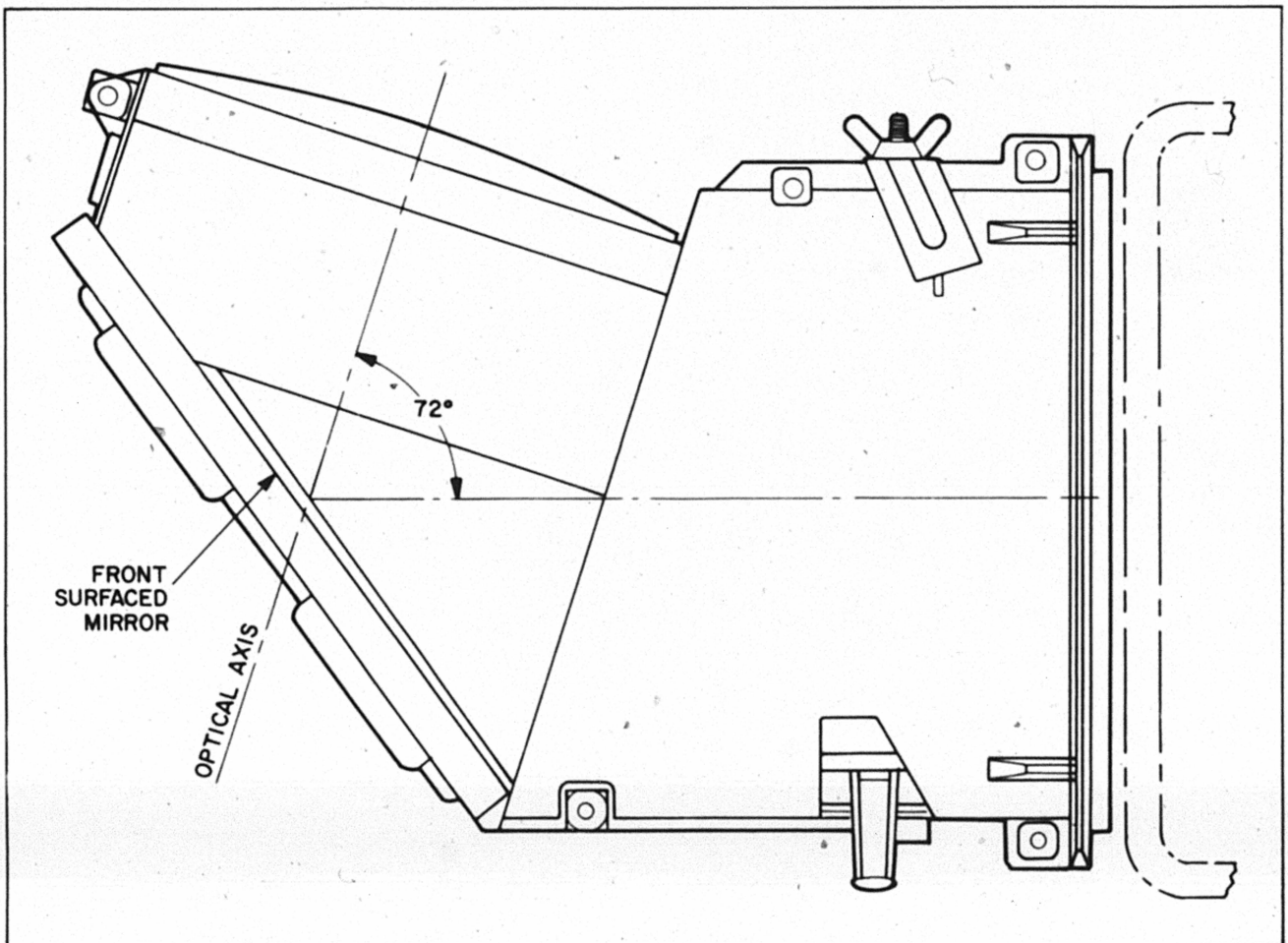


FIGURE 1 - PROFILE DELTA 7 ASSEMBLY

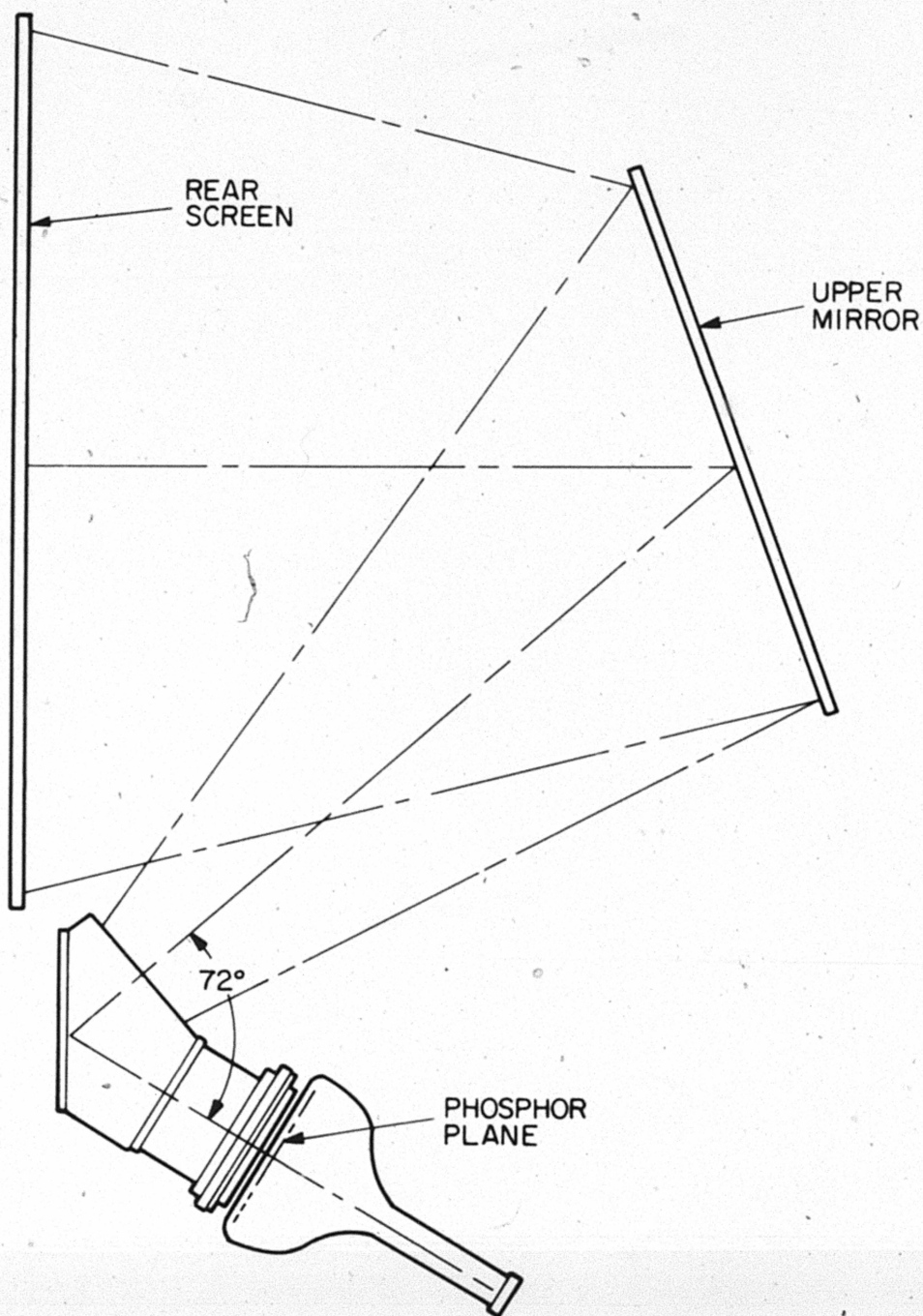


FIGURE 2 - SIDE VIEW OF PV4541P LIGHT PATH

Light Path Profile—A side view of the PV4541 light path profile is shown in Figure 2. Note the tight tuck of the light path provided by the Delta 7 compact optics. For comparison purposes, the light path profile of the earlier SN4545 is shown in Figure 3.

Liquid Cooled Projection Tubes—The PV4541 uses three projection tubes, RGB, arranged in a horizontal in-line configuration. The configuration uses two (R,B) slant face tubes and one (G) straight face tube. All tubes are fitted with a metal jacket housing with a clear glass window. The space between the clear glass window and the tubes faceplate is filled with an optical clear liquid. The liquid, which is heat sunk to the outside world, prevents faceplate temperature rise and thermal gradient differentials from forming across the faceplate when under high power drive levels. With liquid cooled tubes the actual safe power driving level can be essentially doubled over that of the non-liquid cooled tubes. This is highly desirable in terms of the system's picture brightness. The PV4541P will be set up for a 18 watt drive level where previous systems were set for an 8.5 watt drive level.

Figure 4 shows a side view of the jacket/tube assembly. The metal jacket shell extends back, well over the panel to funnel seal, and thereby functions as an effective x-ray shield. The metal jacket also serves as the mechanical mounting and support for the picture tube assembly. Figure 5 shows a front view of the metal jacket. Note that the front of the jacket is elongated and mounting holes are placed in the elongated sections. This is purposely done to permit the tightest possible tube to tube spacing for in-line tube configurations. The projection tubes used in the liquid cooled assembly are the same six inch round projection tubes as used in previous projection systems.

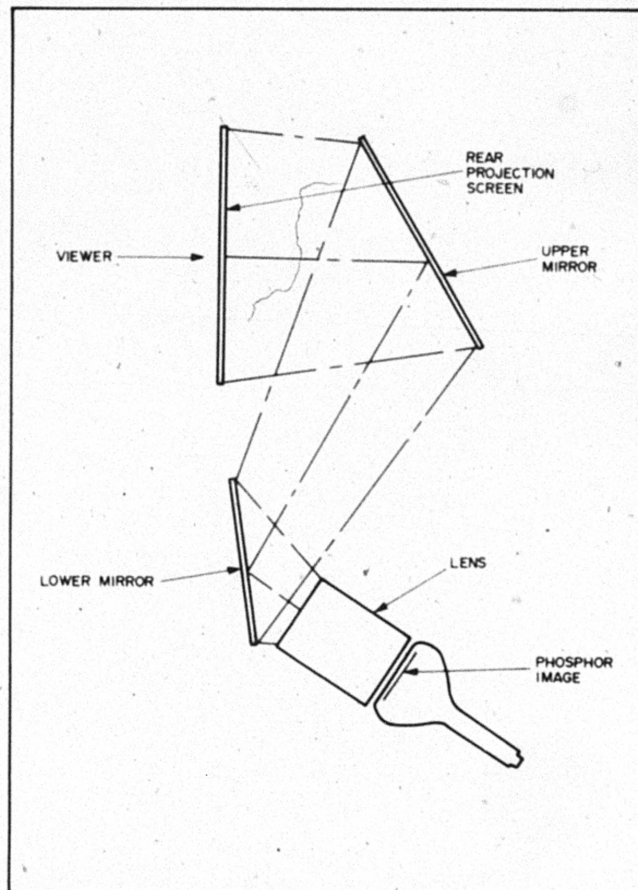


FIGURE 3 - SIDE VIEW OF SN4545 LIGHT PATH

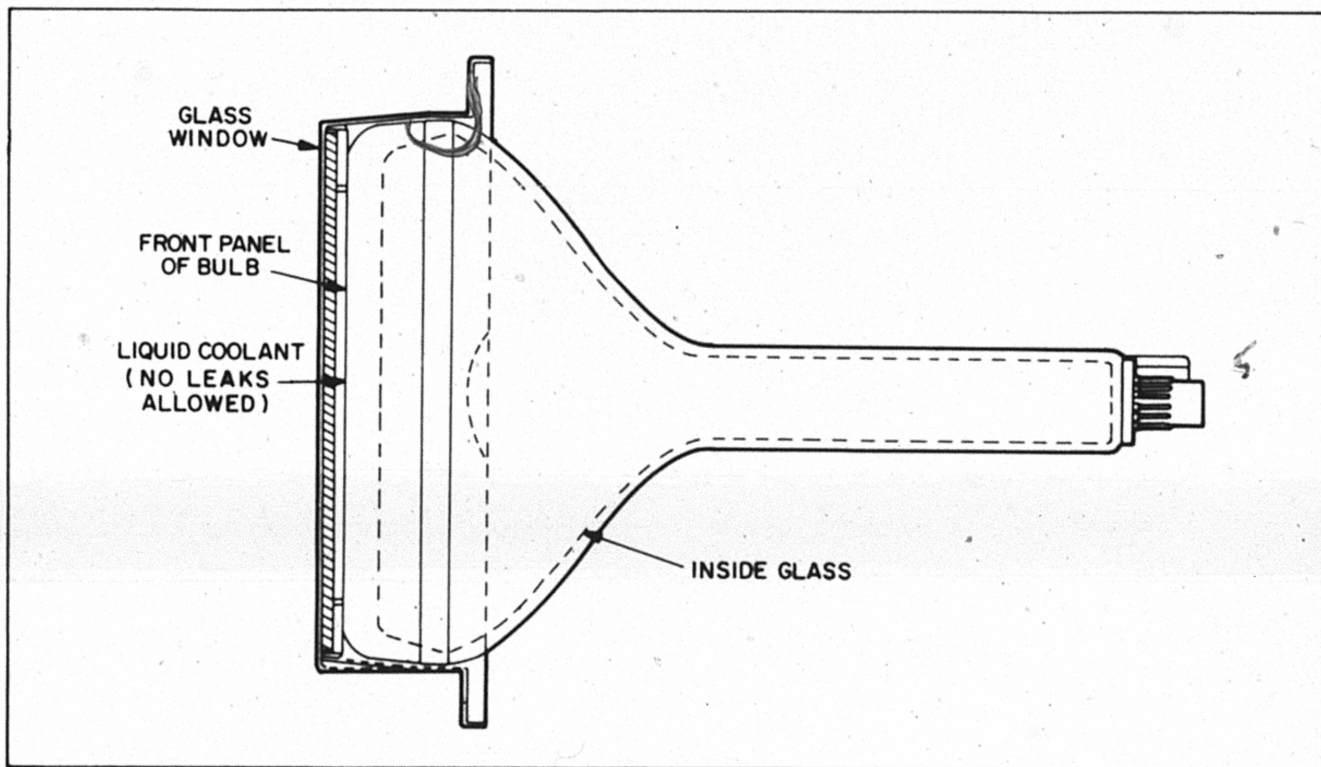
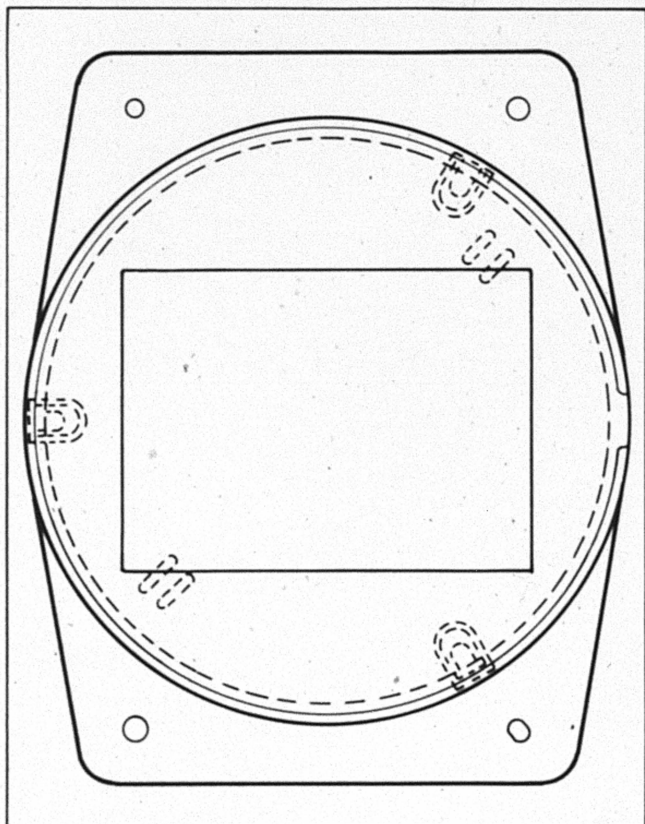


FIGURE 4 - LIQUID COOLED CRT AND JACKET ASSEMBLY



**FIGURE 5 - FRONT VIEW OF
CRT MOUNTING JACKET**

Optical Coupling—A pliable optical clear silicone separator is mounted between the glass window on the liquid cooled jacket assembly and the rear element of the Delta 7 lens. When under mounting pressure, the silicone separator makes intimate contact with these two light path interconnecting surfaces. By so doing, the multiple light reflections that ordinarily take place between these two surfaces, when air coupled, are greatly reduced. As a result, projected picture contrast is significantly improved. This improvement, by measurement, is minimally 2 to 1.

Self Convergence—In the PV4541, tilted faceplate red and blue tubes, in combination with shifted R,B pointing angles and image off-set, are used to provide for system three image convergence. This combination is required because of the shorter TCL in the Delta 7 lens design and its incompatibility with existing faceplate tilt angle. The shorter TCL of the Delta 7 lens design also dictates the use of an optical magnification of 11.3X as compared to 9.7X in previous systems. This means that residual mis-convergence errors will be magnified greater than in previous systems. The tube mounting and centering provided by the liquid cooled jacket, rather than a pod with floating tube which relies on uniformly drawn down pod back cover ring for tube centering, may well offset the greater optical magnification of system residual errors. Since the PV4541 is a self converged system, registration only of the three images will be required. This will be accomplished, as in previous systems, with the 9-180, Raster Registration Board. The only circuit value change in the 9-180-01, used for the PV4541, is different horizontal width coil values. This

change in values is required to permit the proper range of raster size set up for the higher optical magnification. The 9-180-01 will also have deflection yoke Molex type connector provisions.

Deflection Yoke—The deflection yoke used in the PV4541 will be the 94-3464-01. This is the same yoke as the 94-3464 but supplied with Molex connectors. Where the basic yoke remains unchanged, the connections to the yoke, to provide the proper direction of horizontal and vertical scan, vary with the application. The desire is to standardize on one projection yoke, the 94-3464-01, and accomplish the proper connections required for the particular application through multiple Molex pin provisions on the 9-180, Raster Registration Board.

Projection Screen—The projection screen for the PV4541 will be a two piece assembly. The front (viewer-side) piece will be a vertical lenticular black striped section. The rear piece will be a vertical off-centered Fresnel section. Shifting the center of the Fresnel section changes the vertical angle of maximum light flux projection and thereby directs maximum vertical picture brightness more in line with the eye of a seated observer at typical viewing distance. The screen has a nominal gain of 6 and a horizontal viewing angle of 35 degrees. The black striping not only improves initial contrast but enhances picture brightness and quality hold up when under typical room ambient lighted conditions.

Picture Brightness—The PV4541 demonstrates increased picture brightness over our previous models. This is realized by the use of liquid cooled projection tubes and their ability to accommodate higher power drive levels. The improvement will be substantial but probably not as great as 2 to 1. The optical magnification in the PV4541 is 11.3X as compared to 9.7X in the SN4545.

Electronic Packaging—The design emphasis, placed on compactness of cabinet enclosure, places the location and mounting of the system electronics well to the rear of the cabinet enclosure. The electronic modules are mounted in the rear of the cabinet on a sloping shelf which supports the upper mirror and also on a partitioning bulkhead well toward the base of the cabinet. Ample space is available for module mounting with complete control accessibility. However, a disadvantage of the modules placements is the difficulty of set up raster registration which requires yoke rotation, positioning magnet ring set, and adjustments on the 9-180 Raster Registration Module. For single operator set-up this is accomplished through a viewing port which permits viewing the rear side of the projection screen. Since the viewing port is, by necessity, low in the cabinet enclosure, system registration in the customer's home may be more difficult. With a rear view of the projection system, all registration controls will appear to have normal behavioral characteristics, except for the horizontal linearity adjustments. A rear view of the display reverses the normal right and left sides of the display. For this reason, previous procedures for horizontal linearity set-up, as referenced to the right and left picture sides, must, mentally as well as in the printed picture, have these two words interchanged.

CIRCUIT INFORMATION

M-3 (9-153-08)

Projection T.V. was originally based on the first System 3 concept known as X-1, including a V.R.T. The system has been updated in many areas especially the power supply. The new "A" line "Projo" starts with omitting the V.R.T. and M-4 (9-154) module. The power is now provided by a switch mode power supply, which also supplies stand by power for the remote control unit. However several of the supplies previously on the M-4 have been relocated to the M-3 module.

The M-3 has been updated to the 9-153-08 (see Fig. 6). The new M-3's main additions are the sweep derived power supplies. The 9-153-08 module contains the 62VDC, 25VDC, 24.5VDC, -7.5VDC, 32V current source and the C.R.T. filaments. The changes include a new sweep transformer with the extra windings and the diodes and filter capacitors to provide the added DC supplies. The 250VDC, 60V pulse and the -48VDC also remain on the M-3.

The connector system has been changed from the Brundy connectors to the newer Molex type. The additional power supplies on the board required additional connectors for the power distribution (see Connector List—9-153-08). Connector 3A thru 3E are unchanged. Connector 3G "double" is omitted because the power link thru is no longer needed. However, 3M and 3N are added to power up the M-1 and M-2 modules. Connectors 3F, 3H, 3T, and 3K are used with some potential changes. 4H supplies the filament voltage for the C.R.T. Connectors 4K, 3I, 3J, 3S and 3R are required to pick up the remaining supplies omitted from the M-4.

The final changes are in the drive circuit. The collector resistor of the predriver has been changed and a zener diode added in series. This provides a delayed turn on and off time to minimize C.R.T. face burn problems. A diode has been also added to the start of the driver transformer. This supplies power to the driver circuit from the 62VDC supply reducing power loss in the dropping resistor.

CONNECTOR LIST 9-153-08

3A	(SAME AS 9-153-03)
3B	(SAME AS 9-153-03)
3C	(SAME AS 9-153-03)
3D	(SAME AS 9-153-03)
3E	(SAME AS 9-153-03)
3G	(PIN 1 12VDC, PIN 2 GND)
3F	(SAME AS 9-153-03)
3H	(PIN 1 12VDC, PIN 2 GND)
3T	(SAME AS 9-153-03)
3K	(PIN 1 12VDC, PIN 2 GND)
3I	(PIN 1 12VDC, PIN 2 GND)
3J	(PIN 1 12VDC, PIN 2 GND)
3S	PIN 1, 25V PIN 2 GND
3R	PIN 1, 25V PIN 2 GND
4H	(C.R.T. HEATER VOLTAGE)
4K	(PIN 5 62VDC, PINS 1-4 GND, PINS 2, 3 12VDC)
*3M	3M (PINS 1, 4 GND, PIN 5 25VDC, PIN 6, 12VDC)
*3N	(PIN 1 32V CURRENT SOURCE, PIN 2 12VDC, PIN 3 NC, PIN 4 GND, PIN 6 25VDC)

*No voltage at 3M Pins 2 and 3 and 3M Pins. There are provisions for 7.5V and 24.5V

SHUT DOWN CIRCUITS

There are several shutdowns, raster blanking clamps and safety circuits in the Projection T.V.

The first is the High Voltage shutdown circuit. The sweep transformer H.V. is proportionally sensed and if the limits are exceeded triggers the latch transistors (QX3376 and QX3327) which clamps the horizontal drive and disables the H.V. This circuit protects the viewer from X Radiation.

The next shut down circuit is the horizontal yoke open/short protection. Transformer TX3351 primaries are balanced with equal but opposite currents so zero output voltage is produced on the secondary winding during normal operation. If any one of the horizontal windings or circuit should open/short this would unbalance the sensing transformer. The net difference of flux in the transformer TX3351 causes a significant secondary output voltage. The secondary is tied to the base of Q3327 of the H.V. shutdown latch circuit, which triggers the latch circuit clamping the horizontal drive removing H.V. The latch circuit also enables a raster blanking circuit. The M-2 raster blanking is coupled thru pin 2 of connector 3C2.

VERTICAL SWEEP SHUTDOWN

The vertical circuit has a protection system for short or opens similar to the horizontal system. Transformer T8501 on the 9-180 Registration module has three primaries, one for each vertical yoke winding. During normal operation no secondary voltage is available. However, when an unbalance of the transformer currents and flux occurs, the secondary voltage raises, producing a DC voltage output. The DC voltage is coupled back to the M-2 via connector 2G, and there it turns on the raster blanker transistor, cutting off the C.R.T. 's. This reduces C.R.T. burn possibilities.

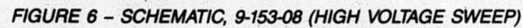
OVER BEAM SHUTDOWN

The beam current shut down transistor on the M-2 senses the ABL level. If excessive beam current is sensed, the beam current shut down transistor (Q2676) turns off. This turns on the crowbar circuit on the M-2 (relocated from the A-10218 module). The crowbar circuit loads the 5V supply, causing it to drop. The 5VDC provides power to the microprocessor chip. A drop of the 5VDC supply to approximately 3.5V or less causes the microprocessor to reset to the off state. This leaves the receiver in the off state to prevent C.R.T. burns if excessive beam current occurs.

INTERMITTANT HORIZONTAL DRIVE

Loss of or intermittent horizontal drive can result in a marked or burned C.R.T. face. Protection is accomplished on the M-3 module thru R3177 and R3178. If the drive stop, the -38Vdc supply, which is sweep derived decreases, forward biases the raster blanking circuit on the M-2. This is coupled to the M-2 thru connector 3C. This minimizes raster burn problems.

It can be seen that any fault which causes a high concentration of beam current to hit a tube screen can cause a permanent mark on the screen.



9-323 SWITCH MODE POWER SUPPLY

The new projection television incorporating the 9-323 switch mode power supply and the 9-153-08 sweep module differs from the projection set using the V.R.T. In the old system, the V.R.T., along with the 9-154 low voltage power supply, supplies 132V D.C. for the sweep, 62V D.C. for the vertical, 25V D.C., 24.5V D.C., 12V D.C. for horizontal drive, 6.05V R.M.S. for the filaments, and an 8V pilot supply. The space command transformer supplies 12V D.C. for the space command tuner, and the audio 60 Hz transformer supplies power for the audio amplifier. The other supplies are taken off the sweep.

The new PV4541 eliminates the V.R.T., space command transformer, and audio transformer, and replaces them with the 9-323 Switch Mode Power Supply, Figure 7. The switch mode is a supply that is always running as long as the set is plugged in. It supplies 132V D.C. for the sweep, a 12V D.C. standby for the space command, a 12V D.C. which is switched on when the set is turned on (12V switched), -8V D.C. for telens, and 35V D.C. for audio. The 62V D.C. for vertical, 25V D.C., and the filament voltage are now taken off the sweep. This new system is not a Wessel sys-

tem, however. There is no longer a regulation transformer as with the old system. The main B+ for the sweep is now regulated by the Switch Mode Power Supply.

The manner in which the 9-323 (Fig. 7A) operates is as follows. When the set is plugged in, the switch mode turns on and remains in a standby mode. The 12V standby is supplied to the space command module and -8V is supplied to the telens. The 132V is initially unregulated and will be approximately 150V. This is because the sweep circuitry is not active and no load is present to load the supply down.

An on/off pulse from the tuner goes to the base of Q3402. Initially it is in the off state and the base of Q3402 is at 0 volts. Transistor Q3402 is in the off state. This causes Q3403 and Q3404 to be in the off state also thus supplying no voltage to the 35V and the switched 12V supplies. When the on/off button is activated, the pulse goes to a high state supplying current to the base of Q3402 thus turning on Q3402, Q3403, and Q3404. The 12V switched and the 35V will come on. When this happens, the 12V switch will begin to supply power to the horizontal drive. The horizontal drive will begin to drive the sweep and the high voltage will come up.

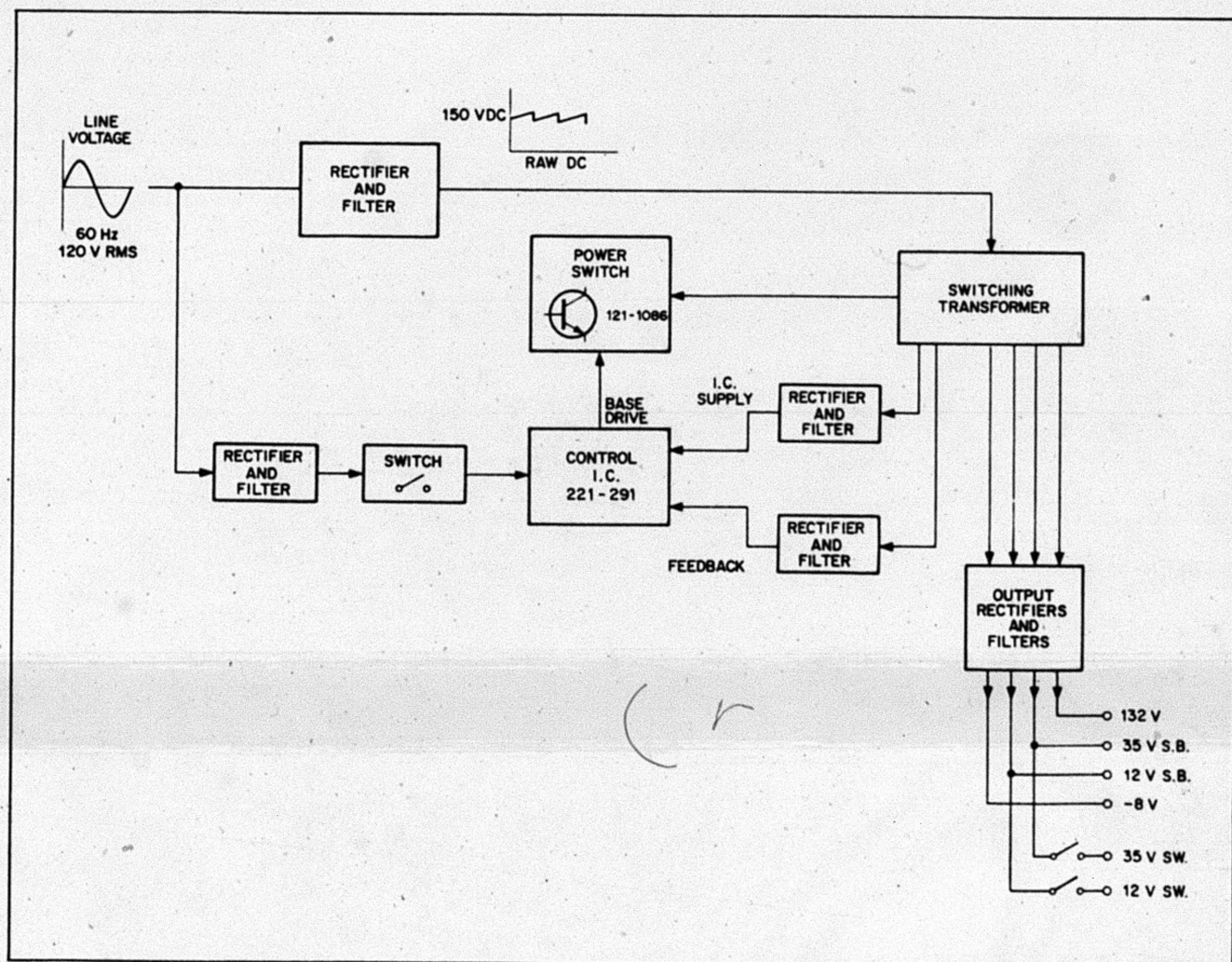


FIGURE 7 - BLOCK DIAGRAM OF 9-323 SWITCH MODE POWER SUPPLY

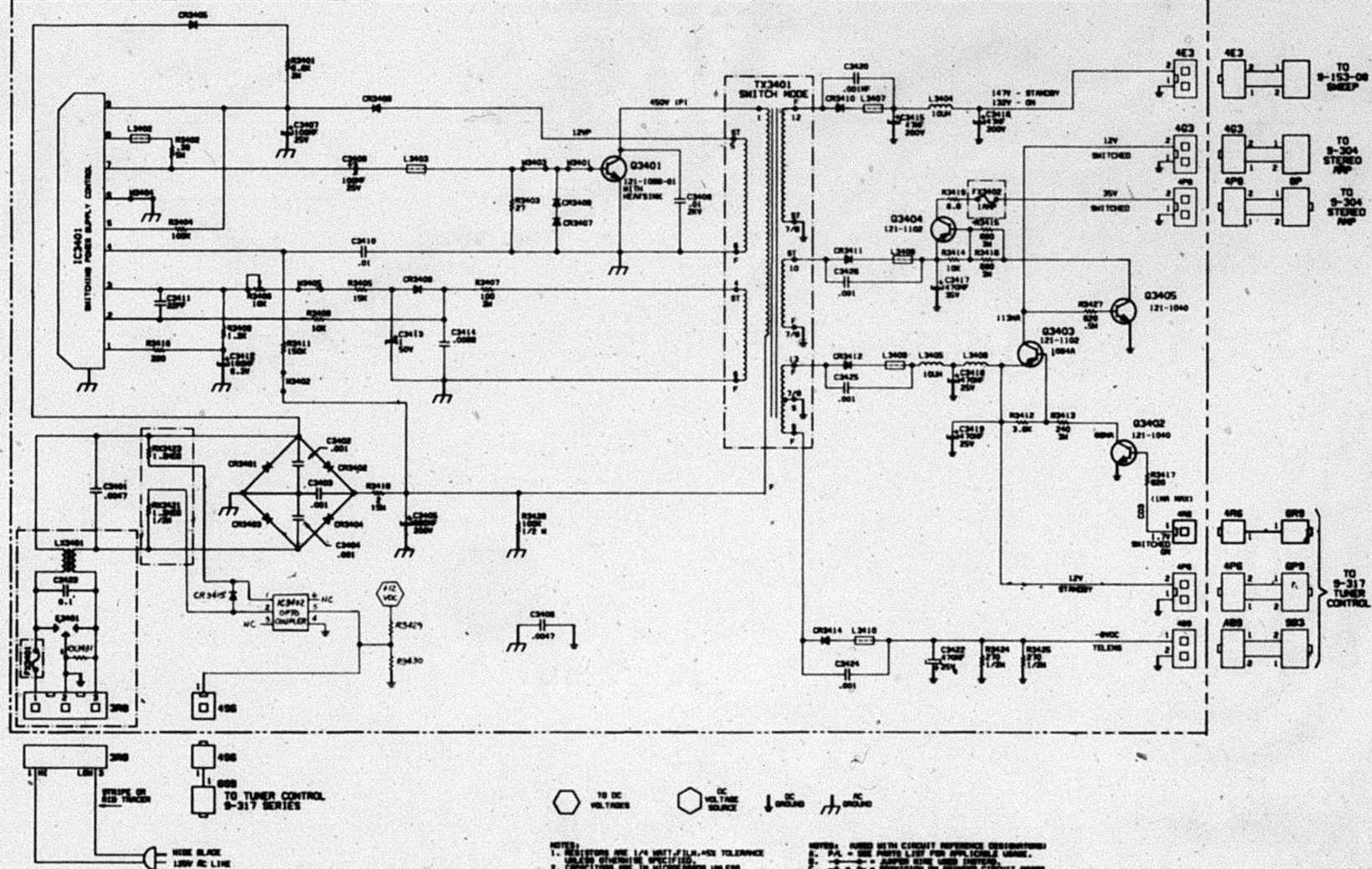


FIGURE 7A - SCHEMATIC, 9-323 SWITCH MODE POWER SUPPLY

A15

A16

We can see on the 9-153-08 sweep that the 62V drive which usually comes off the sweep is initially supplied by the 132V source through R3601. This is sufficient to supply B+ to the driver transformer until the sweep can supply 62V.

When the on/off button is pushed again, the pulse supplied to the base of Q3402 goes low, again turning off the 3 switch transistors. This disconnects the 12V from the drive circuitry and turns off the set. The 9-323 then goes back to the standby mode.

Now follows a discussion on how the 9-323 operates. In the 9-323 a rectified and filtered A.C. provides 150V to the system. This is supplied to one side of the main primary of TX3401, the switching transformer. The other side of the primary is connected to the collector of Q3401, the switching transistor. The emitter is grounded. Pin 8 of IC3401 supplies base drive current to the base of Q3401 switching it on and off, Figure 8.

When the transistor turns on, the impedance between the collector and the emitter of the transistor becomes very small or saturated and pin 1 of the primary of TX3401 is essentially grounded. 150V appears across the primary of the transformer. The current from the 150V supply begins to flow through the primary and the collector to ground. Energy is stored in the core of the transformer. The current starts at 0 and ramps up until the transistor is turned off. When the transistor turns off, the impedance between collector and emitter becomes very large and current falls rapidly back to zero. This can be seen in Figure 9. This large di/dt in the winding causes a large flyback voltage across the winding. The peak amplitude of the pulse will be about 250V with a peak ringing of about 380V. This pulse can be seen at the collector of Q3401, Figure 10.

The primary of TX3401 is magnetically coupled to the line isolated secondaries. The same flyback pulse that appears across the primary will appear across the secondaries. There will be a change in amplitude according to the respective turns ratios between primary and secondaries. These pulses are rectified by diodes CR3410, CR3411, CR3412, and CR3414. The rectified pulses are filtered by capacitors and chokes to produce the D.C. outputs (132V, 12V, 35V, -8V).

The supply voltage to the 229-291 is supplied to pin 9. During startup the line voltage is rectified by CR3405, fed through R3401 to pin 9. It is filtered by C3407. This voltage will be about 7.5V. When the chip begins supplying base drive to the transistor the system will start operating. A flyback pulse will appear on the secondary winding at pin 6 of the transformer. This pulse is rectified by CR3406 and filtered by C3407. The voltage at pin 9 will be about 12V. The I.C. is now being supplied power from the transformer. The voltage at pin 9 will now be greater than the voltage supplied from CR3405 and the diode will be back biased off.

The turns ratios between the primary and secondaries, the leakage inductances between primary and secondaries, the duty cycle of the switching transistor (time which the transistor is on, or conducting)/(total time between cycles or period), and the switching frequency are all factors determining the D.C. output voltages. Once the transformer has been specified for leakage inductance and turns ratio the frequency and duty cycle determine the output voltages.

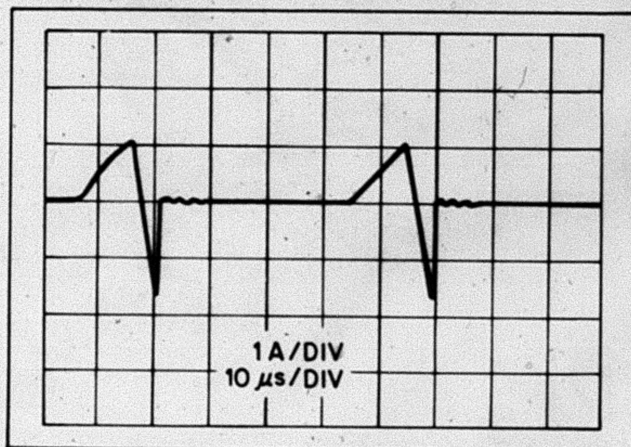


FIGURE 8 - WAVE FORM Q3401
BASE DRIVE CURRENT

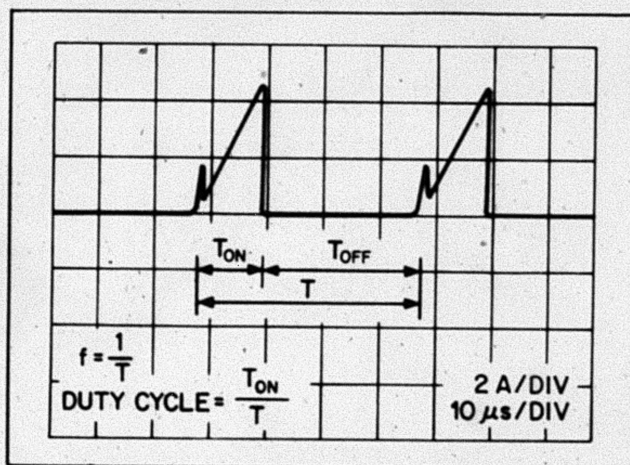


FIGURE 9 - WAVEFORM, Q3401
SWITCHING DUTY CYCLE

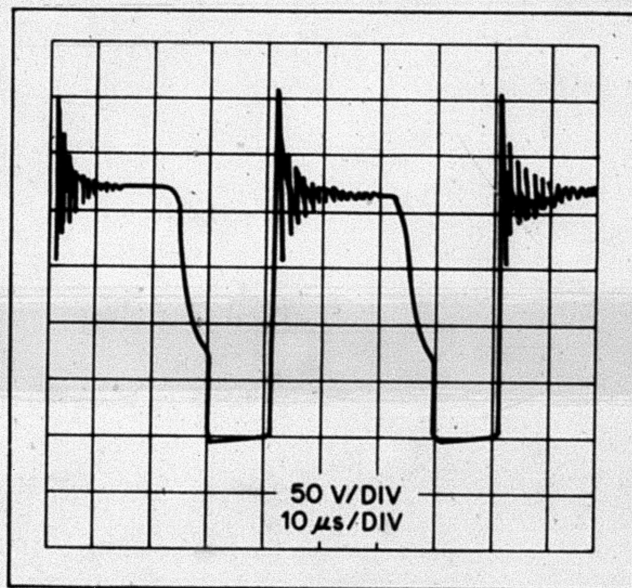


FIGURE 10 - WAVEFORM, FLYBACK
PULSE (Q3401 COLLECTOR)

The D.C. output voltages, once set, are regulated to remain within certain limits regardless of load current or line voltage variations. This is accomplished by varying the frequency and the duty cycle at which the switching transistor is operated. If the line voltage rises or the secondary load current decreases, the output voltages will want to rise. In order to keep them constant the duty cycle will decrease and the frequency will increase. If the line voltage decreases or the load current increases, the output voltages will want to fall. The duty cycle will then increase and the frequency will decrease.

The range of frequencies at which the 221-191 is capable of operating at is 16KHz-76KHz. The duty cycle can range from 1:2 to 1:20. In the case of the 9-323 operating with the projo extreme conditions are found at 132V line, set off (minimum load), and 108V line, high beam, full audio (maximum load).

At minimum load the total period is 14.9 μ s and the ON time is 1.8 μ s. This calculates to a frequency of 67KHz and a duty cycle of 1:8.3. At maximum load the total period is 49.8 μ s and the on time is about 18.9 μ s. This gives a frequency of 20KHz and a duty cycle of about 1:2.6. At all other standard conditions these two parameters should fall within these limits. There are other fault conditions these two parameters should fall within these limits. There are other fault conditions in which they can fall outside these limits.

Changes in frequency and duty cycle are controlled by the regulation winding of the transformer (pins 4-6), and pins 2, 3, and 4 of the I.C. Pin 1 of the I.C. is a voltage internally generated by the I.C. This will be about 4 volts. The negative portion of the voltage waveform at pin 4 of the transformer is rectified and filtered to produce about -23 volts at the anode of CR3409. The current flowing from the 4 volt supply at pin 1 of the I.C. through R3410, R3409, R3405, and R3406 to the -23 volts gives a voltage drop across (R3410 + R3409) of about 2 volts. This gives a voltage at pin 3 of the I.C. of 2 volts. A voltage change at pin 3 of the I.C. is what determines a change in frequency and duty cycle of the base drive at pin 8.

A change in line or load will be sensed by the feedback winding and transformed into a voltage change at CR3409. If the line voltage rises or the secondary load decreases, the peak to peak voltage across the feedback winding will increase. This will cause the voltage at the anode of CR3409 to go more negative. More current will be drawn from pin 1 of the I.C. through the four resistors since the total potential across them has increased. The voltage drop across (R3410 + R3409) will become larger due to the increased current flowing through them and the voltage at pin 3 will drop. The frequency will then increase and the duty cycle will decrease and the secondary voltages will decrease to their original value.

Looking at the change of the voltage at pin 3, an increase of a few millivolts will actually be seen. This is due to the fact that the unregulated supply voltage at pin 9 of the I.C. will rise and cause the internally generated voltage at pin 1 to rise. The voltage at pin 3 will actually fall momentarily, but it will do so too fast to be seen.

Pin 2 of the I.C. is the zero crossing detector. The voltage from pin 4 of the transformer is fed to the I.C. through R3407 and R3408. It will be an approximate square wave ranging from -0.2V to 0.7V. When the voltage at pin 2 rises from -0.2V to 0V the I.C. senses that the loads on the secondaries have drained most of the stored energy from the core of the transformer and turns on the base drive at pin 8. This turns on the transistor and starts supplying energy to the core again.

The turning off of the transistor is controlled by pin 4 of the I.C. This pin is connected through a capacitor to ground, and through a resistor to the 150V supply. Pin 4 of the I.C. starts with a voltage of 2 volts. C3410 begins to charge up through R3411 when the 0 crossing at pin 2 turns on the base drive. The voltage ramps up linearly towards a limit of 4V. Somewhere below 4V the voltage at pin 4 reaches the reference voltage of a comparator inside the chip. When this happens the base drive at pin 8 turns off, thus turning off the transistor.

The peak voltage reached by the capacitor at pin 4 will vary depending on line voltage and load current. At minimum line voltage and maximum load current the peak voltage will be about 4V. At normal line and load the peak voltage will be about 3V.

When the set is off, the 9-323 goes into a standby mode. Since there is no load on the 132V or the 35V supplies, the only load current being drawn is from the 12V S.B. and -8V supplies. These currents are minimal. The frequency will therefore be greatly increased and the duty cycle will be decreased. The collector waveforms will look like the ones in Figures 11 and 12.

If any one of the secondary D.C. supplies becomes short circuited to ground the supply goes into a short circuit mode. In this mode the collector waveforms will look similar to Figures 11 and 12. The difference being that in short circuit mode the frequency will be quite low, on the order of a few KHz.

Pins 5 of the I.C. senses the voltage at pin 9 through R3404. If the supply voltage at pin 9 goes low enough to bring pin 5 down below 2V, the base drive will be disabled and the system will shut off.

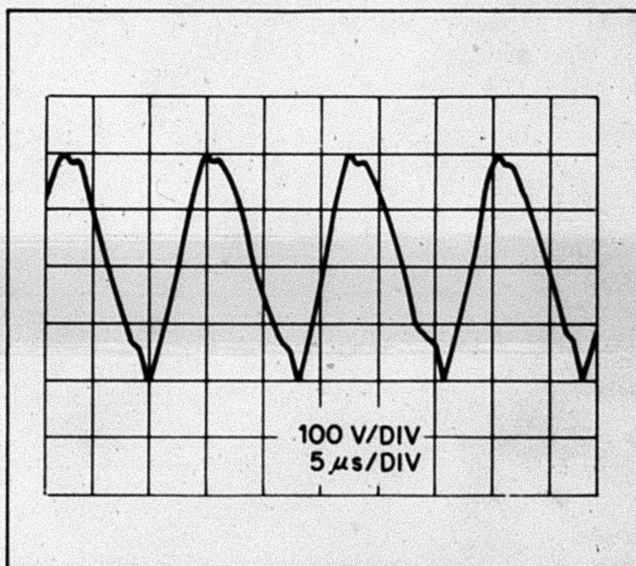


FIGURE 11 - WAVEFORM, Q3401 COLLECTOR

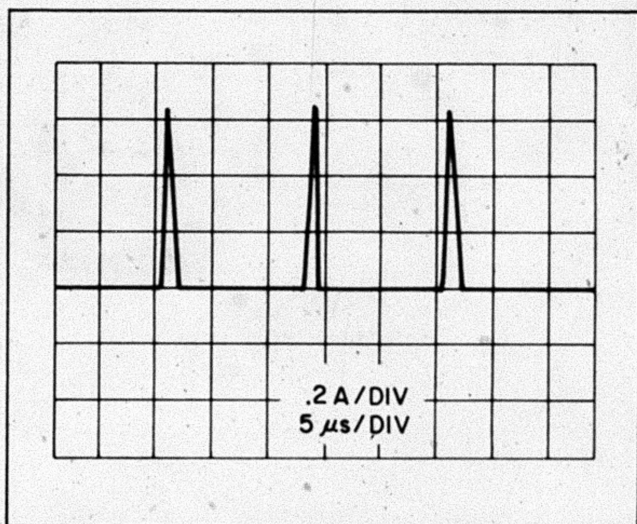


FIGURE 12 - WAVEFORM, Q3401 COLLECTOR

SERVICE HINTS (9-323 OPERATION)

If the 9-323 is not operating, first check to see if the main fuse, FX3401 is good. If it is open, the transistor is probably shorted and should be replaced. If it is good, check for 150V D.C. at the collector of Q3401, and base drive to the base of the transistor. If the drive is not there, see if CR3405 and R3401 are allowing

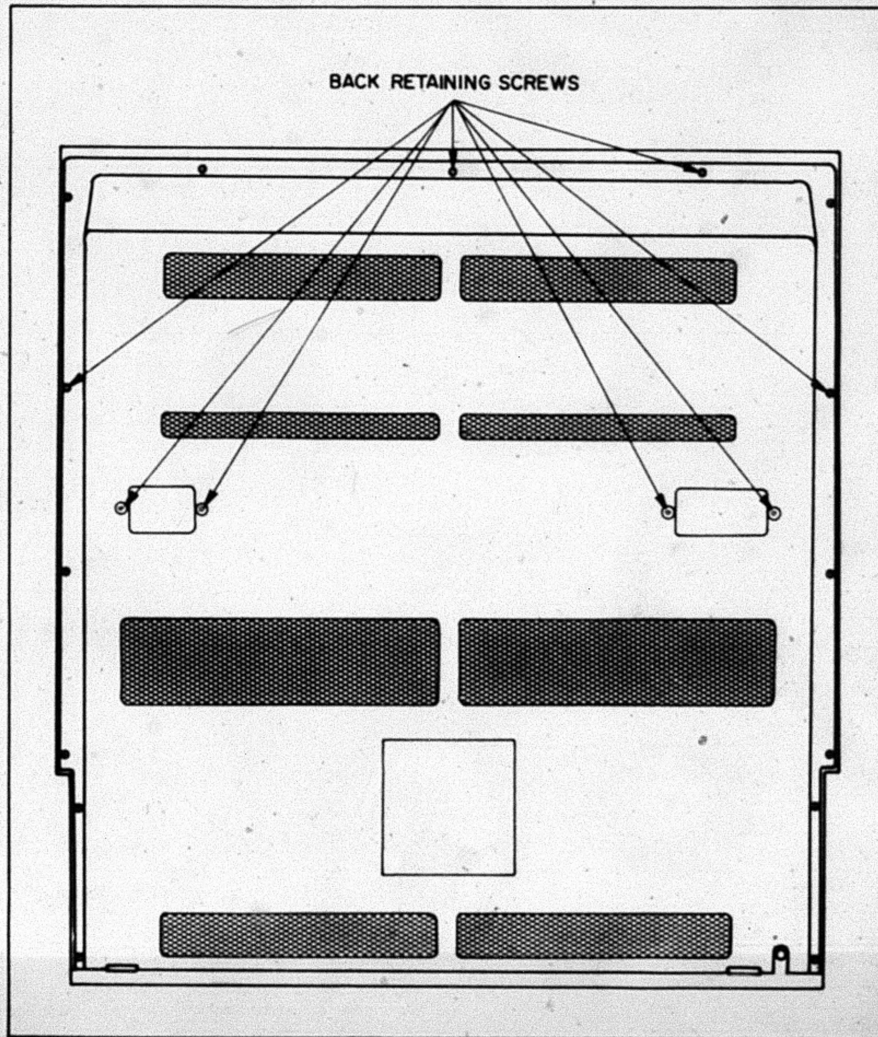
at least 7.5V at pin 9 and 2V at pin 5 of the I.C. Pin 1 should be at 4V and pin 3 at 2V. If the voltages at pins 9 and pin 5 look o.k., but pin 1 is not generating 4V, the chip is probably bad and should be replaced. AFTER REMOVING THE BAD CHIP ALL THE FOILS THAT WILL BE SOLDERED TO THE PINS OF THE NEW CHIP MUST BE DISCHARGED TO HOT GROUND BEFORE SOLDERING IN THE NEW CHIP. If the I.C. seems o.k. but there is still no base drive check R3402, C3408, and L3403. Also make sure CR3407 and CR3408 are good. If the supply operates but there is a high amount of ripple on the secondary supplies, check if CR3409 is good. If it is leaky, the voltage at pin 3 will not be held constant and the output voltages will vary considerably.

If the supply is operating but one of the output voltages is not there, check the respective rectifier diode and the components in series with it. If they are good, check the winding and the transformer for continuity.

If the supply functions properly but the set does not start when the on/off button is pushed, check the 12V SW. If the 12V SW. does not come up when the button is pushed, make sure that the on/off pulse at R3417 is at 1.5V and the base of Q3402 is at 0.7V. If these voltages are o.k., Q3403 is probably bad.

If the set works but there is no audio, check to see that FX3402 is good. If the fuse is o.k. and there is no 35V, Q3404 is bad. If these are o.k., the problem lies with the audio amplifier.

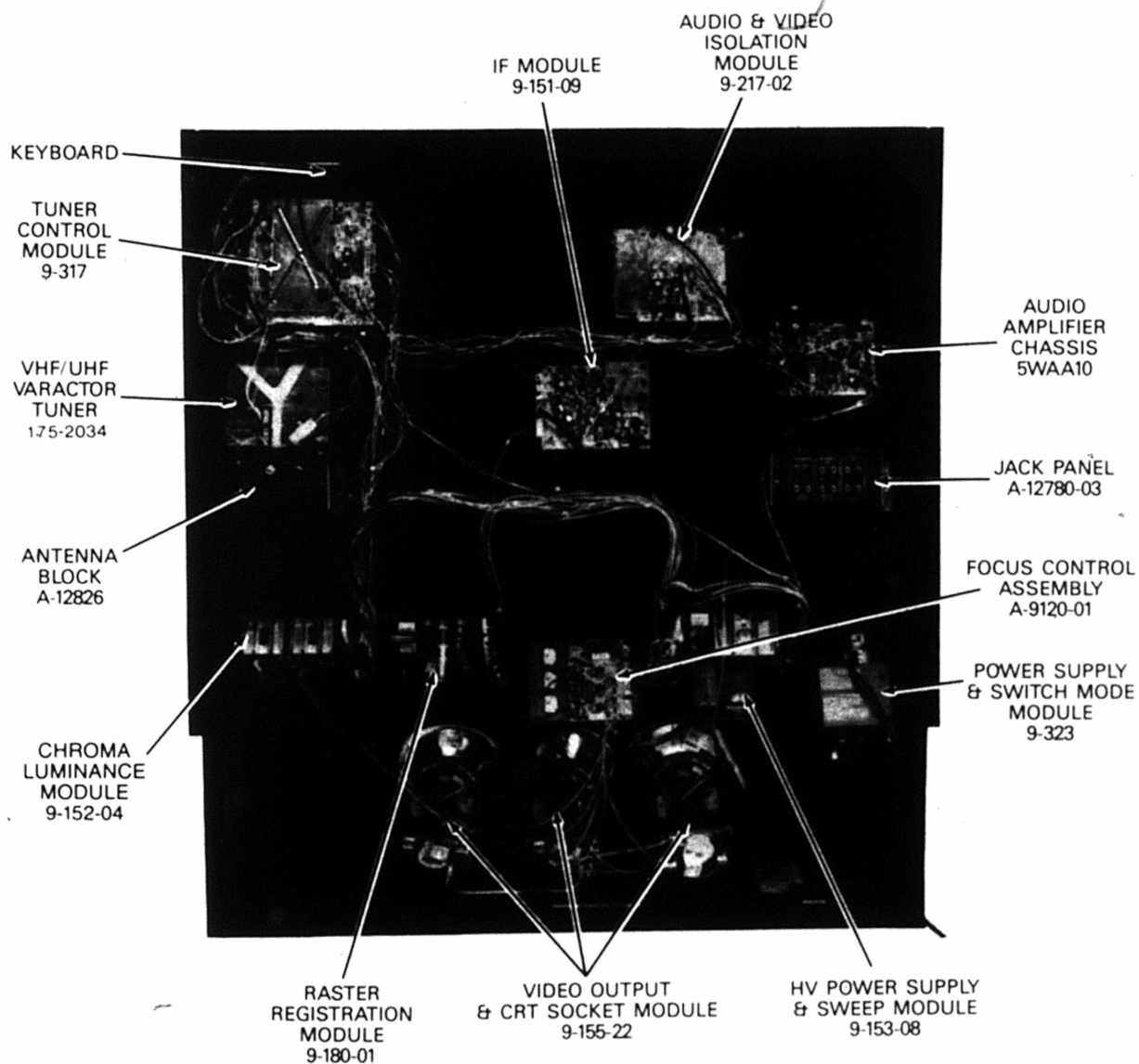
SERVICE INFORMATION



REARVIEW, PV4541P

MODEL AND FEATURES INFORMATION

SERVICE NUMBER	PV4541P					
1	FOCUS MODULE	9-179-01				
2	IF MODULE	9-151-09				
3	CHROMA LUMINANCE MODULE	9-152-04				
4	HV POWER SUPPLY & SWEEP MODULE	9-153-08				
5	VIDEO OUTPUT & CRT SOCKET MODULE	9-155-22				
6	RASTER REGISTRATION MODULE	9-180-01				
7	AUDIO & VIDEO ISOLATION MODULE	9-217-02				
8	TUNER CONTROL MODULE	9-317				
9	POWER SUPPLY & SWITCH MODE MODULE	9-323				
10	FOCUS CONTROL ASSEMBLY	A-9120-01				
11	AUDIO AMPLIFIER CHASSIS	5WAA10				
12	GREEN CRT & ANODE LEAD	A-12803				
13	RED CRT & ANODE LEAD	A-12809				
14	BLUE CRT & ANODE LEAD	A-12809-01				
15	DEFLECTION YOKE (3 REQ)	95-3464-01				
16	SECONDARY CONTROLS, SWITCHES & PCB ASSEM.	A-10771-02				
17	PICTURE CONTROL	65-10750				
18	SHARPNESS CONTROL	63-10750-02				
19	TINT CONTROL	63-10751				
20	COLOR LEVEL CONTROL	63-10751				
21	BALANCE COVER	63-10751-09				
22	TREBLE CONTROL	63-10751-10				
23	BASS CONTROL	63-10751-10				
24	BLACK LEVEL CONTROL	63-10754				
25	RESET TINT CONTROL	63-10857-11				
26	RESET COLOR CONTROL	63-10857-11				
27	BRIGHTNESS RANGE CONTROL	63-10857-11				
28	HI FILTER SWITCH	85-1585-03				
29	AUDIO SOURCE SWITCH	85-1585-03				
30	VIDEO/TV/AUX SWITCH	85-1585-04				
31	VIDEO SOURCE SWITCH	85-1594				
32	MEMBRANE SWITCH	A-11351-08				
33	RING ON/OFF, REM/MAN, AFC & VHF/UHF SWITCHES	A-12517				
34	BALANCE KNOB	A-11625				
35	TREBLE KNOB	A-11625				
36	BASS KNOB	A-11625				
37	CONTROL COVER	24-2993				
38	CABINET BACK	2-4004				
39	OPERATING GUIDE	206-945				
40	INFRARED DET. AMP. & LIGHT SENSOR	A-12838				
41	MAIN CABINET	14-11598				
42	SPEAKER 2½" (2 REQ)	49-1317				
43	SPEAKER 6½" (2 REQ)	49-1328-01				
44	SPACE COMMAND TRANSMITTER	124-93-01				
45	VHF/UHF VARACTOR TUNER	175-2034				
46	ANTENNA BALUN ASSEMBLY	A-11358				
47						
48						
49						
50						



SPECIFICATIONS:

The preliminary specifications for the PV4541P Compact Projection Receiver.

PV4541P Preliminary Specifications

REAR SCREEN	Fixed, Vertical Black Striped Lenticular in Combination with an off-centered Fresnel
SCREEN GAIN	Nominal 5
VIEWING ANGLE	Horizontal \pm 35 degrees, Vertical 12.6 degrees
SCREEN SIZE	45 inch diagonal with 4 by 3 aspect ratio
OPTICS	Three (3) USPL, Compact Delta 7, 3 element coated acrylic lenses
FOCUS METHOD	Focus handle with wing nut lock down provisions
LIMITING RESOLUTION	Minimum of 3 line pairs/mm across a 5 inch image diagonal
OPTICAL COUPLING	Silicone Pad insert
PROJECTION TUBES	Three (3) RGB Rauland 6V high dynamic drive, short neck, liquid cooled, Zenith's patented projection tubes
ANODE VOLTAGE	Nominal, 30KV
PROTECTION CIRCUITRY	Sweep loss, high beam and Anode shutdown
LIGHT OUTPUT	42 ft-lbts nominal average center picture brightness with white field display
RESOLUTION	330 lines NTSC Video
POWER	Standard 120 volt, 60Hz, nominal 150 watts, 2 prong AC plug with 8 foot line cord
RF ANTENNA INPUT	75 ohm, coaxial
REMOTE CONTROL	Space Command 6500 remote control
DIMENSIONS	44 3/16" W, 44 5/8" H, 27 1/4" D

REMOVING THE ESCUTCHEON AND SCREEN

To remove or replace the screen, the escutcheon framework must first be removed.

The escutcheon frame is secured to the front of the cabinet by means of insert pins attached to the back of the frame. See Figure A.

Carefully insert a flat edge (plastic knife or equivalent) under the inside edge of the escutcheon frame and pry the escutcheon forward and away from the cabinet.

After removing the escutcheon frame, you will note that the screen is further secured with four retaining brackets. See Figure B.

Remove these retaining brackets and gently release the screen from the side and bottom grooves.

With the screen/assembly removed, you will have clear access to the rear mirror and the CRT assemblies. See Figure C.

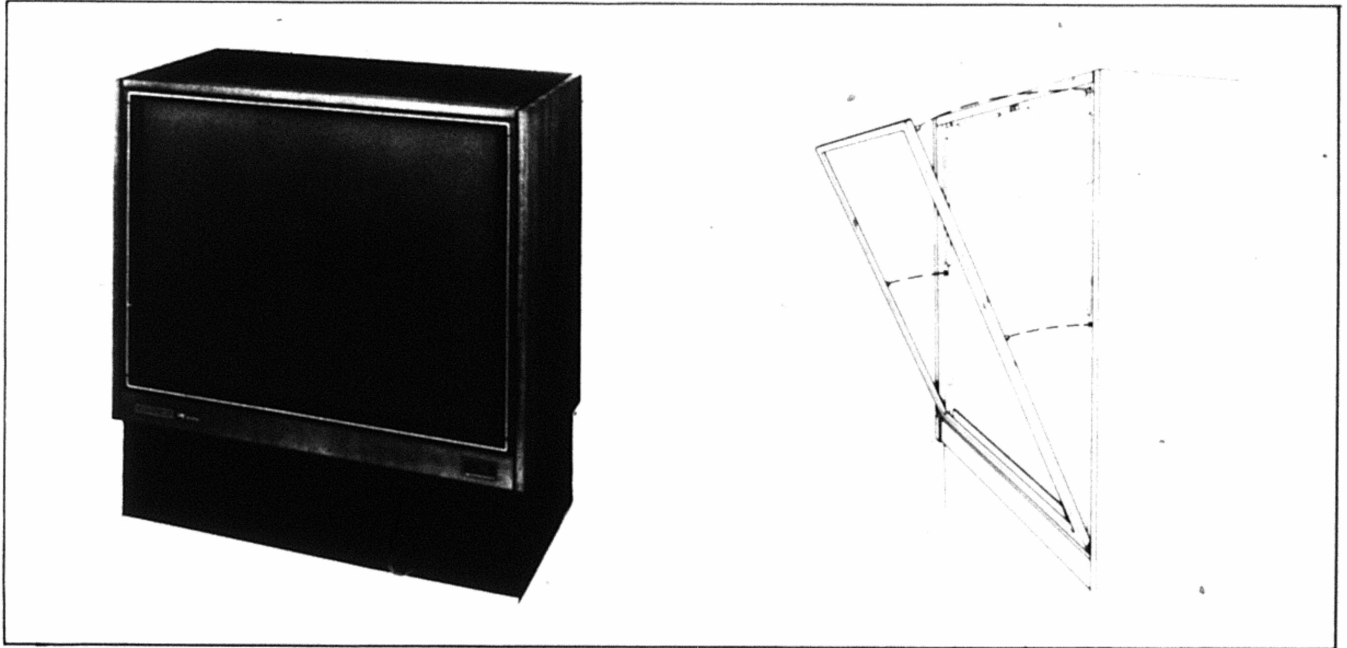


FIGURE A - ESCUTCHEON REMOVAL

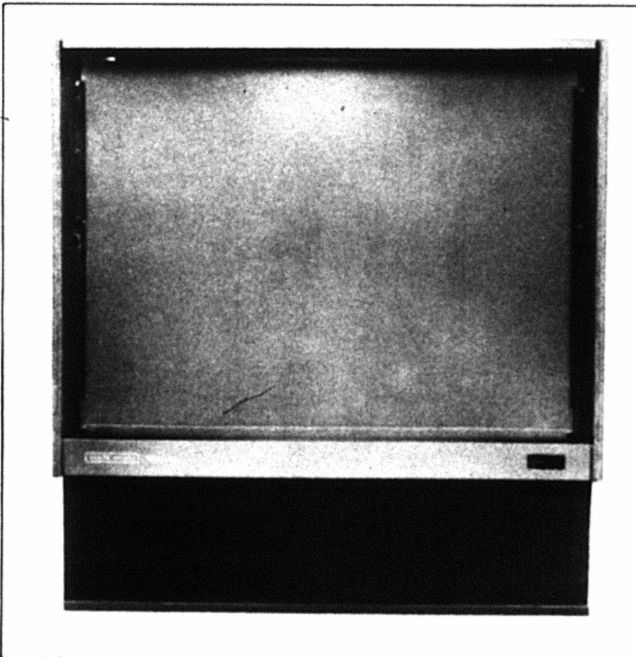


FIGURE B - REMOVING SCREEN

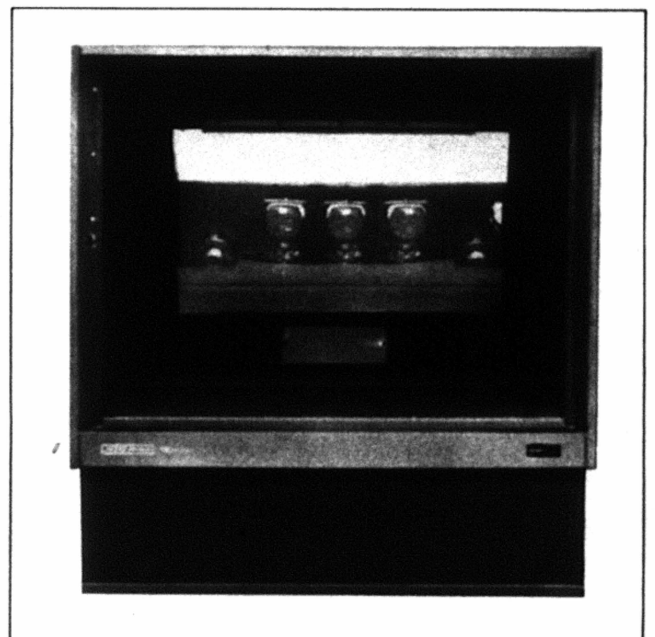
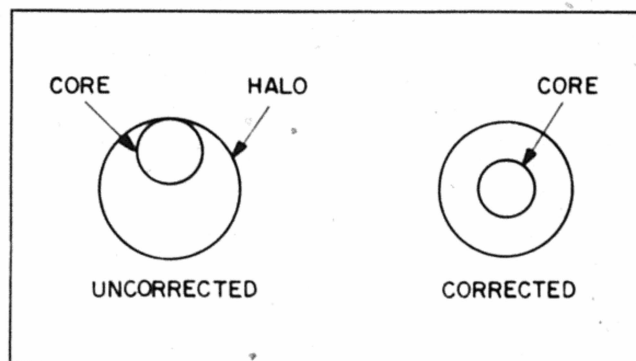


FIGURE C - REAR MIRROR AND CRT ASSEMBLIES

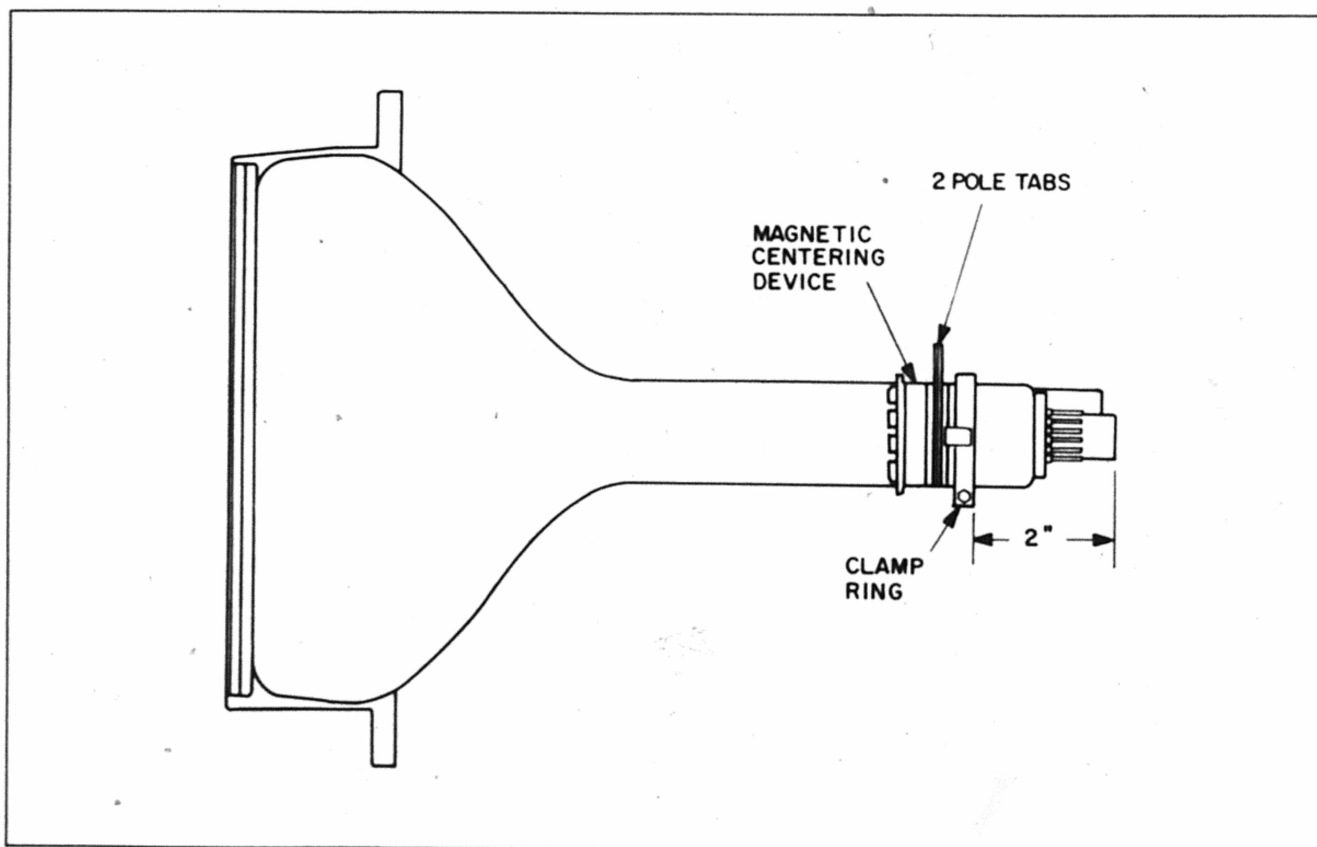
PREFOCUS SETUP PROCEDURE PV4541

1. Mount MCD assembly on neck of CRT as shown. Clamp ring in two inches from end of CRT socket.
2. Set yoke steerage magnets to zero.
3. Set MCD magnets to zero.
4. The beam steerage is done with one tube on at a time with a dot pattern signal applied. The center of the raster will be used for the beam alignment focus pattern with mechanical and electrical focus controls.
5. Rotate electrostatic focus control clockwise until a one-inch diameter defocused halo is obtained. You should now see a halo with a bright core within the halo.
6. The core movement will be as follows. The core will move at right angles to the position of the two pole tabs. For example, with tabs set at the 12 o'clock position, the core will move on the horizontal axis to the 3 o' or 9 o'clock positions when the rings are opened up as shown below.



Note that the core is offset at 12 o'clock from the center of the halo. Rotate tabs on assembly to 3 or 9 o'clock position. Open tabs and observe movement. If the movement is in the same direction as offset, open tabs in opposite direction. The core will now move down to center of halo.

7. When the core has been centered, rotate the electrostatic focus control counterclockwise to obtain best center spot focus. Proceed to the next tube and repeat the procedure. Align all three guns.
8. With the 3 guns now aligned, proceed to the registration setup.



SETUP AND TEST PROCEDURES

SET CONTROLS, "CONTROL PANEL"

Set brightness range control to 1/3 its maximum CW position.

Set black level to detent position set pix to approximate center of rotation.

SET CONTROLS, 9-180 REGISTRATION MODULE

Set full C.C.W. position (Minimum). Horizontal and vertical linearity controls. Place jumpers in store position. Set in center of rotation, horizontal and vertical centering controls.

SET CONTROLS, 9-179, G2 MODULE

Full C.C.W. position (Minimum) R5307, R5304, R5301.

SET CONTROLS, 9-152 CHROMA LUMINANCE

Full C.W. position (Maximum) R2738, R2732, R2727.

SET YOKES AND FERRITE MAGNET RINGS

Set G-2 as required to obtain a usable level (per black and white tracking) and electrical and mechanical focus on all three tubes.

With a crosshatch signal, adjust the master vertical size control so that the tops and bottoms of all images essentially fill the screen.

Rotate the yokes for parallelism with the horizontal reference line on the cabinet frame. Tighten the yoke twist clamp key to 19 ± 1 inch pounds. The most sensitive yoke will be referred to as yoke number one.

Adjust the ferrite magnet rings on the rear of yoke number one yoke housing so that the center of the projected crosshatch is centered on the screen. Glyptol the magnet rings to each other and to the back surface of the yoke housing.

Repeat on the remaining two yokes. These yokes will be referred to as yoke number two and yoke number three.

While observing the raster of yoke number one, retrim the master vertical size control as required to fill the screen plus required over scan.

Rotate yoke number two to match up with yoke number one for best overall vertical and horizontal alignment. Tighten the yoke twist clamp to 19 ± 1 inch pounds.

Repeat 5.9 for yoke number three.

Observe a green field on the green tube and check for phosphor blemishes or defects.

Observe a red field on the red tube and check for phosphor blemishes or defects.

Observe a blue field on the blue tube and check for phosphor blemishes or defects.

The electrical yoke and ferrite magnet ring alignment is now complete.

SET RASTER REGISTRATION, ELECTRICAL ALIGNMENT AND FOCUS:

9-180, Raster Registration, See Module Layout.

NOTE Turn off of color images is accomplished by disconnecting the video output connectors 2N-2Q-2P, as required, but never all 3 at the same time.

CAUTION If All 3 video output connectors 2N-2P-2Q, become disconnected, Turn Off the AC power before re-connecting. Failure to follow this instruction will cause C.R.T. damage.

Turn off the red and blue images and view only the green.

With the green horizontal and green vertical centering controls, adjust the green crosshatch center to viewing screen center.

Adjust the master height control so that 12 squares are displayed vertically.

Measure the distance from the picture center to comparable points top and bottom on the crosshatch display. If stretch is found either top or bottom remove jumper plug (JP) in the green circuit from its store position and plug into the appropriate position for the stretch direction. Adjust the green vertical linearity control so that best vertical linearity is obtained. Re-adjust vertical centering and the master height controls if necessary.

Adjust the green width control so that 15.0 squares are displayed horizontally.

Turn on the red before turning off the green image and adjust the red horizontal and red vertical centering controls to bring the red cross hatch image center coincident with the green image center.

Adjust the red height control to match the green height at the 6 and 12 o'clock positions. If top and bottom coincidence cannot be realized with a particular control setting, purposely adjust the control for overscan until the short part of the vertical scan is registered with the green image.

If registration at the 6 and 12 o'clock positions was coincident with a particular setting of the red height control, proceed to step 6.9. If the red height control was adjusted for overscan in step 6.7, remove the red vertical linearity jumper plug (JP) from its store position and plug into the appropriate position of the overscan direction. Adjust the red vertical linearity control so that the red vertical overscan is reduced to a registered condition with the green image. Re-adjust red height and red centering controls if necessary for best vertical registration.

Adjust the red horizontal width so that it matches the green width at the 3 and 9 o'clock positions. If coincident registration is not possible with a particular control setting, set the red horizontal width control for best compromise. Registration at the 3 and 9 o'clock positions will be further trimmed in subsequent alignment instructions.

Turn on the blue image before turning off the red image. Adjust the blue height control to match the green height at the 6 and 12 o'clock positions. If top and bottom coincidence cannot be realized with a particular control setting, purposely adjust the control for overscan until the short part of the vertical scan is registered with the green image.

If registration at the 6 and 12 o'clock positions was coincident with a particular setting of the blue height control, proceed to step 6.12. If the blue height control was adjusted for overscan in step 6.10, remove the blue vertical linearity jumper plug (JP) from its store position and plug into the appropriate position of the overscan direction. Adjust the blue vertical linearity control so that the blue vertical overscan is reduced to a registered condition with the green image. Re-adjust blue height and blue centering if necessary for best vertical registration.

Adjust the blue horizontal width so that it matches the green width at the 3 and 9 o'clock positions. If coincident registration is not possible with a particular control setting, set the blue horizontal width control for best compromise. Registrations at the 3 and 9 o'clock positions will be further trimmed in subsequent alignment instructions.

Turn on the remaining red and green images and observe the horizontal line up at the 3 o'clock position. If either the red or blue are inside of the green, adjust the green horizontal linearity control so that the green lines up on the most inner image. Maintain horizontal green centering while making this adjustment. The horizontal linearity control for the other image (least inward) is then adjusted for coincidence, while maintaining its horizontal center position.

If the red and blue are both outside of the green at the 3 o'clock position adjust only red and blue horizontal linearity controls for coincidence with the green while maintaining horizontal centering as in step 6.13.

While maintaining horizontal centering, trim the horizontal width and horizontal centering of the blue and red images for best possible registration at both the 3 and 9 o'clock positions.

The system is now registered and ready for viewing.

UPPER MIRROR

The mirror is pre adjusted for raster centering.

SET BLACK AND WHITE TRACKING, "USING WHITE FIELD"

9-152, Chroma, Luminance Vertical Module
9-179, G2 Module

Set color level control to zero, (control panel).

Place black and white setup switch to setup position.

Turn all gain controls fully C.W.,

	Red	Grn	Blu
9-152	R2738	R2732	R2727

Turn all G2 controls fully C.C.W.,

9-179:	R5307,	R5304,	R5301
--------	--------	--------	-------

Advance each G2 control (C.W.) until very low light output from each gun can be seen on the screen. Adjust the G2 controls for low light neutral gray raster.

Return setup switch to normal.

Turn picture, and/or black level control to produce a dimly lighted picture. (White Field)

Observe color temperature and determine the dominant color. Gray scale must be achieved by using only two of the G2 controls, on 9-179. They must be the controls associated with the "deficient" colors, adjust to achieve gray scale.

Using the pictures and black level controls, set for 100. Microamps beam current, (reading green only). Set for 72. Microamps red, using R2738, on 9-152. Set for 60. Microamps blue, using R2727, or 9-152.

Note: If red cannot obtain 72 microamps, or blue cannot obtain 60 microamps, advance black level and or pix controls as required to reach these levels, after which, readjust green to 100 microamps using R2732, on 9-152.

Set picture and brightness controls to obtain a low brightness picture.

Check low light color temperature, and increase the G2 controls (on 9-179). For the deficient colors "if required". If readjustment of the G2 controls is not required, the B/W tracking procedure is completed.

If readjustment of the G2 controls was required, return the pix and black level controls to 100 microamps reading green only. Check red for 72 microamps and blue for 60 microamps. If red and blue are not the required 72 and 60 microamps respectively, adjust (R2738 red) and (R2727 blue) to obtain the required currents, if adjustment of R2738 and R2727 are required, you must repeat those steps.

Brightness range pre-adjustment: Set picture control to approximate mechanical center and black level control to detent, use the chromatic test pattern. Adjust the brightness range control so that background is just barely lit (scan lines just visible).

CHECK FOR PROPER A.B.L. CURRENTS USING MONOSCOPE TEST SIGNAL

"Note" Black and white tracking must be correctly set and brightness range must be pre adjusted provided specified A.B.L. Currents.

9-152, Chroma, Luminance, Vertical Module
9-153, High Voltage Power Supply and Horizontal Sweep Module

Disconnect 2Q and 2N connectors on 9-152.

Meter the brightness limiter test pin and GND on 9-153-02.

Set black level control (control panel) and the picture control to maximum, (full CW).

Check for the appropriate voltage at (ABL) test pin corresponding to the specified (ABL) current. For the Green CRT.

Connect 2Q red and disconnect 2D green check for the appropriate voltage at (ABL) test pin corresponding to the specified (ABL) current. For the Red CRT.

Connect 2N blue and disconnect 2Q red check for the appropriate voltage at (ABL) test pin corresponding to the specified (ABL) current. For the Blue CRT.

HIGH BEAM CURRENT SHUT-OFF TEST

At this time one of the three video output connectors (2N, 2Q, or 2P) is connected to the M2 module. The remaining two video output connectors are not connected.

Connect an 11K resistor from +12 volts to pin 1 of either of the open video output connector (on M2). The receiver should turn OFF.

Repeat the above procedure for the two remaining video output connectors.

SET CHROMATIC (COLOR SENTRY) (CONTROL PANEL)

Set the color sentry switch S7202 to the "on" position.

Set black level control R7103 to the detent position.

Cover light sensor.

Set picture control R7101 to minimum (CCW).

Set tint control R7104 (preset). Brightness range R7107 (preset). Color level R7102 (preset).

Set tint control R7105 (customer set). Color level R7103 (customer set). Black level R7106 (customer set). Picture control R7101 (customer set).

Set (preset) controls to obtain chromatic setup specification: See 28-331 and 222-96.

Check (preset) control settings to chromatic specification.

Set color sentry switch S7202 to off position.

Set and check customer controls to chromatic specifications.

SHUT DOWN, OVER VOLTAGE, AND HORIZONTAL SCAN FAILURE

(9-153 and 9-180)

Set picture control and black level control for "0" beam current.

Connect adjustable power supply (set to 132 V) between ground on 9-153 and B \pm stake of R3377.

Increase power supply voltage upwards from 132 V while monitoring high voltage.

The high voltage shutdown should occur between 34 and 36 KV.

Reactivate set for horizontal scan failure test.

While reactivated, remove blue 8B yoke connector, (9-180) shutdown should occur.

Check vertical yoke failure detector (9-180).

Adjust the picture and black level controls for a dim picture (control Pan).

Short circuit One vertical yoke winding, ((8D) green). The raster must blank complete.

Turn Set Off.

Open Circuit one vertical yoke winding (8D). By disconnecting the 8D connector. The set should ~~refuse~~ turn on.

SET VOLUME LEVEL, 1st TIME TURN ON

Prerequisite

400 H2 at 25 KH2 Modulation

9-151-09 Connector 10 pin 2 set R1451 for 4.0V R.M.S.

9-217-02 Connector 4E8 pin 2 should measure .75V R.M.S.

5WAA10 Connector 8C4 pin's 2 & 4 should measure .75 V R.M.S.

5WAA10 Connector 8B4 pin 2 set R43 for .25 V R.M.S. \pm 1 DB

CHECK MODULATOR, 9-317

Monoscope video 1 V P.P. at 75 ohm, 400 Hz audio 2 V P.P. at 5 V ohm.

Check modulator signal by comparison to TV signal. Connect signals to the antenna terminal block.

Compare signals, audio and video to TV monoscope, by switching from TV. to audio/video, (control panel).

Note screen brightness to be within +3% to -5% Note audio level to be within \pm 7%.

A.G.C.

Set A.G.C. delay 9-151. Set R1353 for A.G.C. delay point monitor A.G.C. delay post on 9-151.

KEYBOARD FUNCTIONS

(See specification). Check receiver keyboard functions.

Direct access channel selection, time recall.

Time, clock setting.

Programmed channel up/down selections.

Volume up/down.

Antenna

P.C.

Ch. Skip

CHECK REMOTE FUNCTIONS

Direct access Channel selections.

Programmed Channel up/down selections.

Volume up/down, mute.

Antenna

P.C.

CHECK SYSTEM FUNCTIONS

Remote—manual switch

UHF—CATV channel selections

Normal—Special AFC—selection

Programmed channel memory

Volume memory

Inter channel mute and raster blanking

On screen display, recall

Raster Blanking and sound muting

CHECK OFF/ON ("ON" FUNCTION)

Balance Control:

Bass & Treble controls and Hi cut switch.

Internal, external switch, on control panel

Internal, external speaker switch at rear of set

External speaker jacks using 8 ohm extension speakers
CAUTION do NOT use speakers with voice call impedances below 8 ohms.

1st Time on volume level, .25 V R.M.S. at external output jack
"right channel".

BROADCAST CHANNELS

*** ZENITH VHF FREQUENCY CHART ***

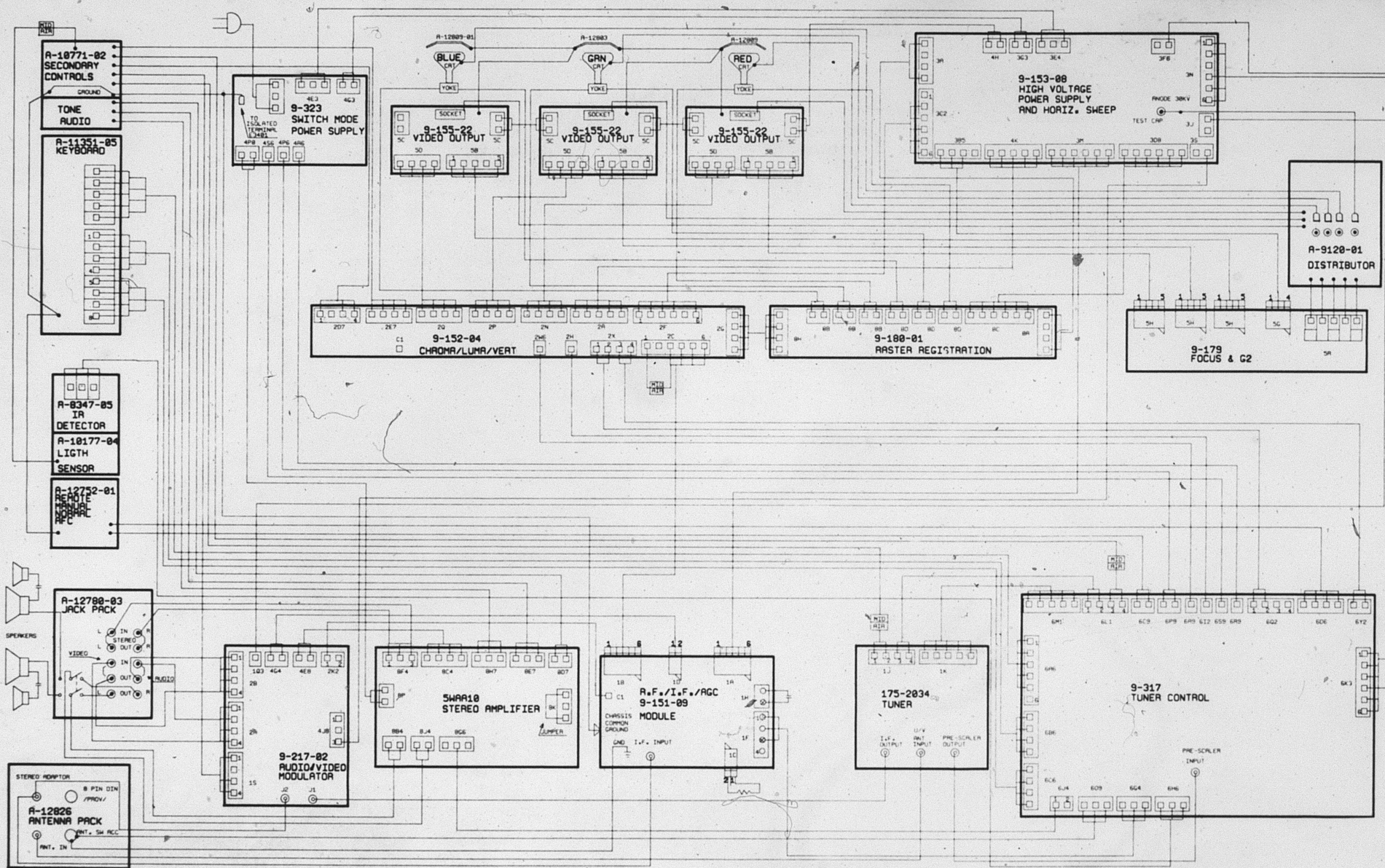
CHANNEL INDICATOR	BAND	VIDEO CARRIER	SOUND CARRIER	OSC. FREQ.	DIVIDE BY 64
*** LOW BAND VHF ***					
2	54 - 60	55.25	59.75	101	1.57813
3	60 - 66	61.25	65.75	107	1.67188
4	66 - 72	67.25	71.75	113	1.76563
5	76 - 82	77.25	81.75	123	1.92188
6	82 - 88	83.25	87.75	129	2.01563
*** HIGH BAND VHF ***					
7	174 - 180	175.25	179.75	221	3.45313
8	180 - 186	181.25	185.75	227	3.54688
9	186 - 192	187.25	191.75	233	3.64063
10	192 - 198	193.25	197.75	239	3.73438
11	198 - 204	199.25	203.75	245	3.82831
12	204 - 210	205.25	209.75	251	3.92188
13	210 - 216	211.25	215.75	257	4.01563

*** ZENITH UHF TV BAND FREQUENCY CHART ***

CHANNEL INDICATOR	BAND	AUDIO CARRIER	SOUND CARRIER	OSC. FREQ.	DIVIDE BY 64
14	470 - 476	471.25	475.75	517	8.07813
15	476 - 482	477.25	481.75	523	8.17188
16	482 - 488	483.25	487.75	529	8.26563
17	488 - 494	489.25	493.75	535	8.35938
18	494 - 500	495.25	499.75	541	8.45313
19	500 - 506	501.25	505.75	547	8.54688
20	506 - 512	507.25	511.75	553	8.64063
21	512 - 518	513.25	517.75	559	8.73438
22	518 - 524	519.25	523.75	565	8.82813
23	524 - 530	525.25	529.75	571	8.92188
24	530 - 536	531.25	535.75	577	9.01563
25	536 - 542	537.25	541.75	583	9.10938
26	542 - 548	543.25	547.75	589	9.20313
27	548 - 554	549.25	553.75	595	9.29688

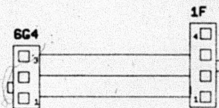
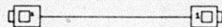
• • • ZENITH UHF TV BAND FREQUENCY CHART • • • (Continued)

CHANNEL INDICATOR	BAND	AUDIO CARRIER	SOUND CARRIER	OSC. FREQ.	DIVIDE BY 64
28	554 - 560	555.25	559.75	601	9.39063
29	560 - 566	561.25	565.75	607	9.48438
30	566 - 572	567.25	571.75	613	9.57813
31	572 - 578	573.25	577.75	619	9.67188
32	578 - 584	579.25	583.75	625	9.76563
33	584 - 590	585.25	589.75	631	9.85938
34	590 - 596	591.25	595.75	637	9.95313
35	596 - 602	597.25	601.75	643	10.0469
36	602 - 608	603.25	607.75	649	10.1406
37	608 - 614	609.25	613.75	655	10.2344
38	614 - 620	615.25	619.75	661	10.3281
39	620 - 626	621.25	625.75	667	10.4219
40	626 - 632	627.25	631.75	673	10.5156
41	632 - 638	633.25	637.75	679	10.6094
42	638 - 644	639.25	643.75	685	10.7031
43	644 - 650	645.25	649.75	691	10.7969
44	650 - 656	651.25	655.75	697	10.8906
45	656 - 662	657.25	661.75	703	10.9844
46	662 - 668	663.25	667.75	709	11.0781
47	668 - 674	669.25	673.75	715	11.1719
48	674 - 680	675.25	679.75	721	11.2656
49	680 - 686	681.25	685.75	727	11.3594
50	686 - 692	687.25	691.75	733	11.4531
51	692 - 698	693.25	697.75	739	11.5469
52	698 - 704	699.25	703.75	745	11.6406
53	704 - 710	705.25	709.75	751	11.7344
54	710 - 716	711.25	715.75	757	11.8281
55	716 - 722	717.25	721.75	763	11.9219
56	722 - 728	723.25	727.75	769	12.0156
57	728 - 734	729.25	733.75	775	12.1094
58	734 - 740	735.25	739.75	781	12.2031
59	740 - 746	741.25	745.75	787	12.2969
60	746 - 752	747.25	751.75	793	12.3906
61	752 - 758	753.25	757.75	799	12.4844
62	758 - 764	759.25	763.75	805	12.5781
63	764 - 770	765.25	769.75	811	12.6719
64	770 - 776	771.25	775.75	817	12.7656
65	776 - 782	777.25	781.75	823	12.8594
66	782 - 788	783.25	787.75	829	12.9531
67	788 - 794	789.25	793.75	835	13.0469
68	794 - 800	795.25	799.75	841	13.1406
69	800 - 806	801.25	805.75	847	13.2344

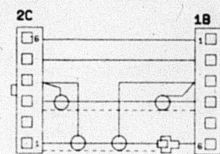
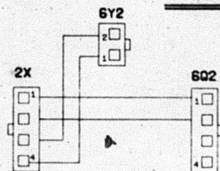
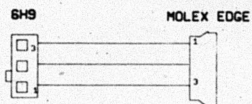
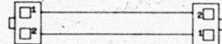


CABLE ASSEMBLIES

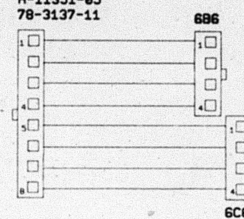
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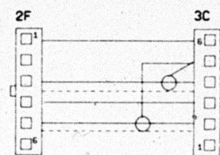
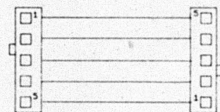
3C4/4C3, 4P6/8P, 4P6/6P9, 5C/5C, AND 5C/4H



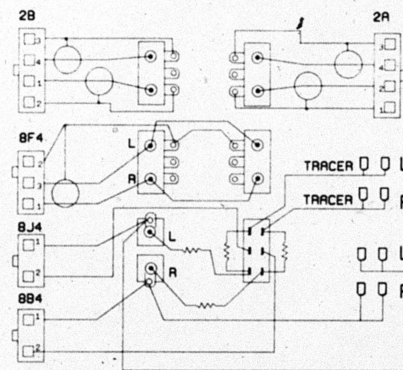
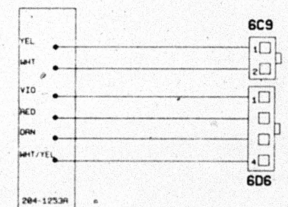
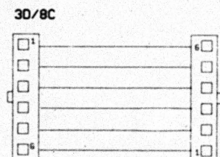
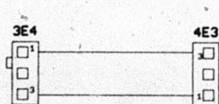
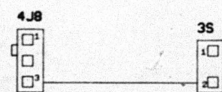
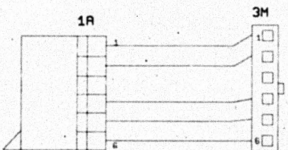
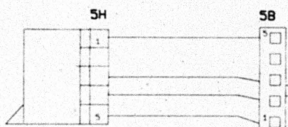
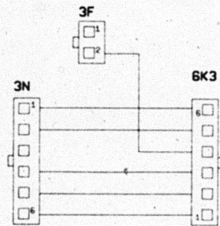
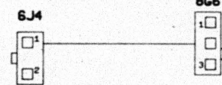
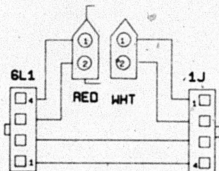
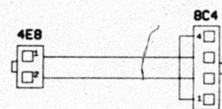
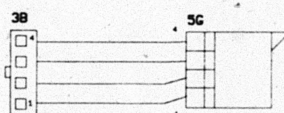
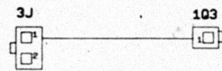
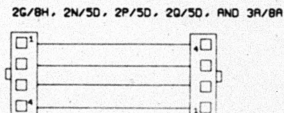
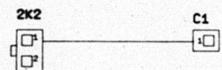
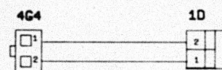
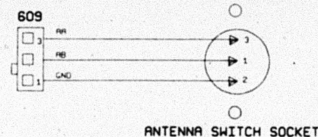
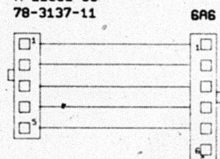
KEYBOARD
A-11351-05
78-3137-11



2A/4K AND 6M1/1K

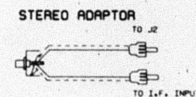


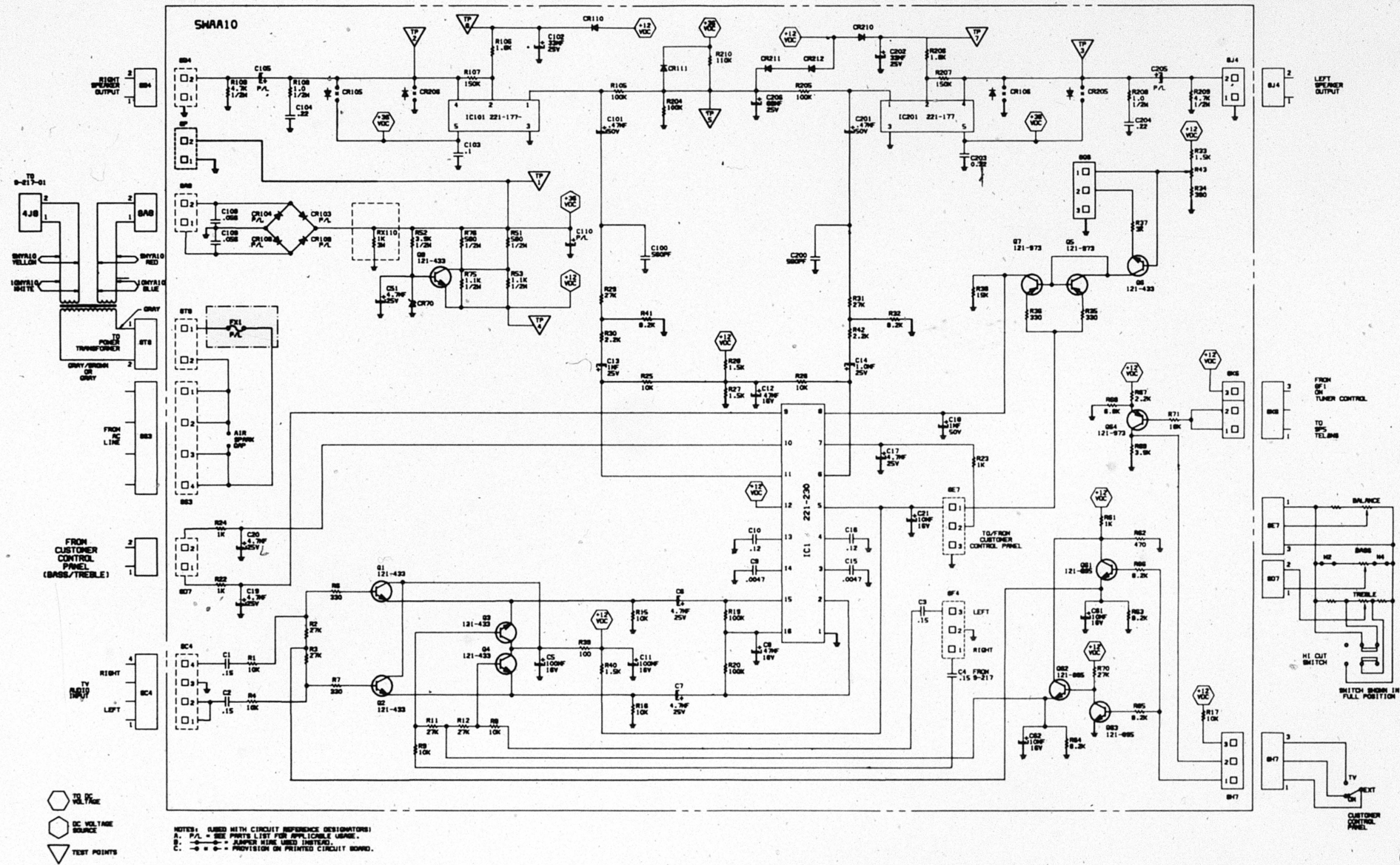
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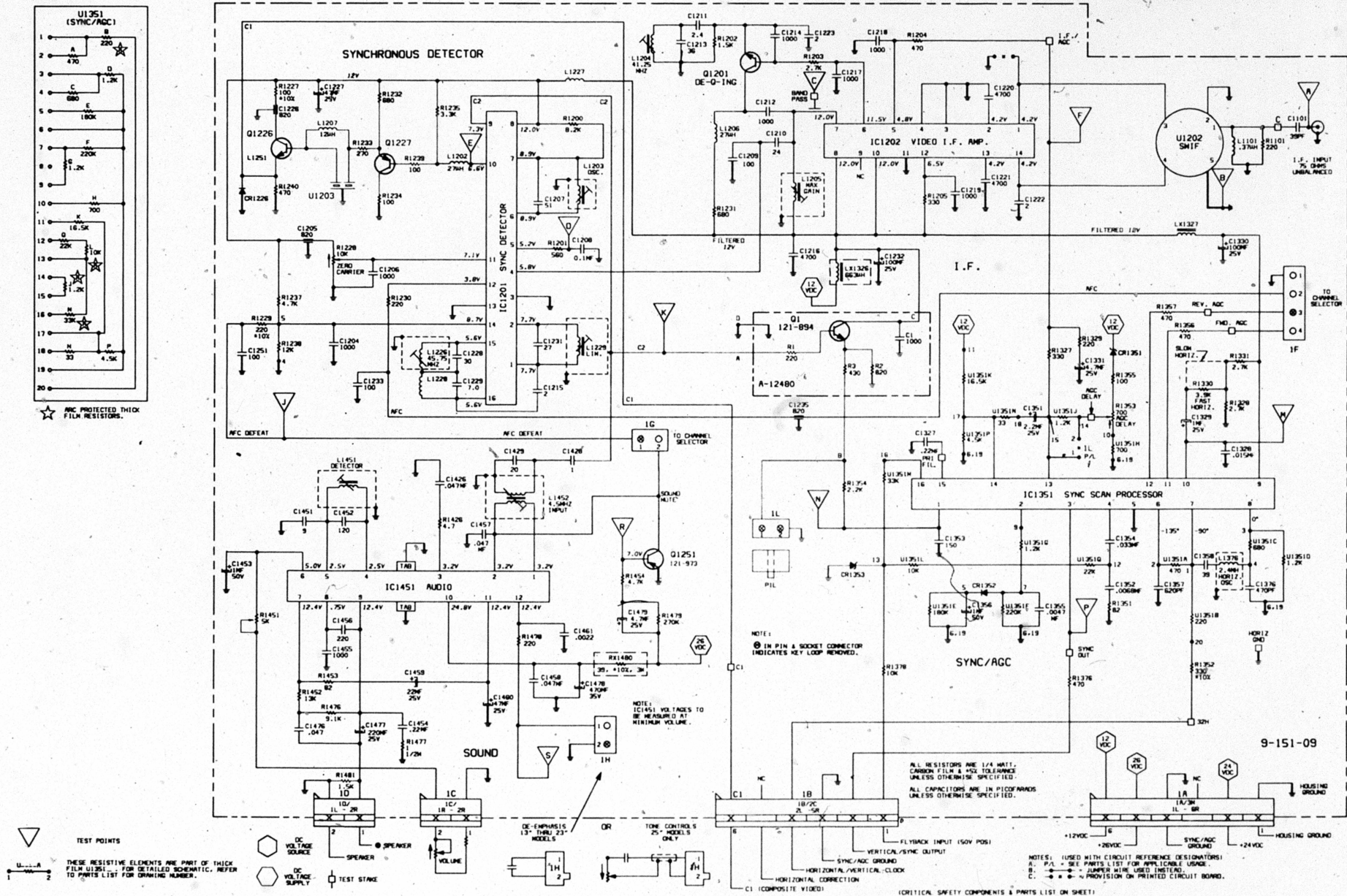


JACK PANEL REAR VIEW

GROUND
#18 GAUGE WIRE







C1

C2

SCHEMATIC, 9-151-09 IF/RF/AGC MODULE

LEGEND, 9-151-09 IF/RF/AGC MODULE

CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9-152 -03	9-152 -04			CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9-152 -03	9-152 -04			CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9-152 -03	9-152 -04			
C2101	22-7738A	CAPACITOR, POLYESTER, .001 MF, 110V, 100V	X	X			C2356	22-7679-05	CAPACITOR, ELECTROLYTIC, 1.5 MF, +50-10%, 16V	X	X			CR2326	103-142-01	CRYSTAL, QUARTZ, 3.58 MHZ OSCILLATOR	X	X			
C2132	22-7562-32	CAPACITOR, POLYESTER, .47 MF, 155, 100V	X	X			C2357	22-7774-02A	CAPACITOR, POLYESTER, .01 MF, 110V, 100V	X	X			CR2626	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			
C2103	22-7774-16A	CAPACITOR, POLYESTER, .002 MF, 110V, 100V	X	X			C2358	22-7613-12D	CAPACITOR, DISC, .001 MF, 110V, 50V	X	X			CR2627	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			
C2104	22-7774-24A	CAPACITOR, POLYESTER, 0.1 MF, 110V, 100V	X	X			C2359	22-7562-32	CAPACITOR, POLYESTER, .47 MF, 155, 100V	X	X			CR2628	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			
C2106	22-7774-16A	CAPACITOR, POLYESTER, .015 MF, 110V, 100V	X	X			C3361	22-7739A	CAPACITOR, POLYESTER, .001 MF, 110V, 100V	X	X										
C2107	22-7707-06C	CAPACITOR, ELECTROLYTIC, .47 MF, +50-10%, 16V	X	X			C2362	22-7621-30C	CAPACITOR, DISC, 68 PF, 155, 50V, NPO	X	X			CR2676	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			
													CR2701		PROVISION						
C2109	22-7779-10A	CAPACITOR, POLYESTER, .0068 MF, 120V, 100V	X	X			C2363	22-7790-33	CAPACITOR, TUBULAR 75PF, 155, 50V, N750	X	X			CR2702	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			
C2110		PROVISION		W	W		C2364	22-7790-32	CAPACITOR, TUBULAR 88PF, 155, 50V, N750	X	X			CR2703	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			
													CR2704	103-301-24A	DIODE, ZENER 24V 1W	X	X				
C2126	22-7742-08	CAPACITOR, TUBULAR CERAMIC, 680 PF, 110V, 50V	X	X			C2426	22-7774-18A	CAPACITOR, POLYESTER, .01 MF, 110V, 100V	X	X			CR2705	103-301-24A	DIODE, ZENER 24V 1W	X	X			
C2127	22-7713-01C	CAPACITOR, ELECTROLYTIC, .47 MF, 120V, 35V	X	X			C2451	22-7742-10	CAPACITOR, TUBULAR .001 MF, 110V, 50V	X	X			CR2729	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			
C2128	22-7563-24	CAPACITOR, POLYESTER, 0.1 MF, 110V, 100V	X	X			C2452	22-7740-06A	CAPACITOR, POLYESTER, .0033 MF, 120V, 100V	X	X			CR2731	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			
C2129	22-7779-10A	CAPACITOR, POLYESTER, .0068 MF, 120V, 100V	X	X			C2477	22-7707-07C	CAPACITOR, ELECTROLYTIC, .33 MF, +50-10%, 16V	X	X			CR2732	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			
C2151	22-7712-06C	CAPACITOR, ELECTROLYTIC, 10 MF, +50-10%, 100V	X	X			C2601	22-7708-04C	CAPACITOR, ELECTROLYTIC, .47 MF, +50-10%, 25V	X	X										
C2152	22-7708	CAPACITOR, ELECTROLYTIC, .47 MF, 120V, 35V	X	X			C2602		PROVISION FOR 22-7564-28		W	W		IC2101	221-193	INTEGRATED CIRCUIT, VERTICAL COUNTDOWN	X	X			
													IC2351	221-179-01	INTEGRATED CIRCUIT, CHROMA LUMINANCE	X	X				
C2153	22-7774-16A	CAPACITOR, POLYESTER, .015 MF, 110V, 100V	X	X			C2603	22-7708-04C	CAPACITOR, ELECTROLYTIC, .47 MF, +50-10%, 25V	X	X										
C2154	22-7708-02	CAPACITOR, ELECTROLYTIC, 15 MF, 120V, 35V	X	X			C2604		PROVISION FOR 22-7564-28		W	W		L2108	20-3831A	COIL, RCF, FILTER, 663 uH	X	X			
C2156	22-7774-16A	CAPACITOR, POLYESTER, .015 MF, 110V, 100V	X	X			C2606	22-7708-04C	CAPACITOR, ELECTROLYTIC, .47 MF, +50-10%, 25V	X	X			L2126	20-3907-17A	COIL, PEAKING, 27 uH	X	X			
C2157	22-7779-06A	CAPACITOR, POLYESTER, .0033 MF, 120V, 100V	X	X			C2607		PROVISION FOR 22-7564-28		W	W		L2201	20-3831A	COIL, RCF, FILTER, 663 uH	X	X			
													L2251	20-3907-17A	COIL, PEAKING, 27 uH	X	X				
C2210	22-7708-05C	CAPACITOR, ELECTROLYTIC, 10 MF, +50-10%, 25V	X	X			C2651	22-7708-05C	CAPACITOR, ELECTROLYTIC, 10 MF, +50-10%, 25V	X	X			L2276	20-3997	LUMA DELAY LINE	X	X			
C2208	22-7708-05C	CAPACITOR, ELECTROLYTIC, 10 MF, +50-10%, 25V	X	X			C2676		PROVISION FOR 22-7707-09		W	W		L2326	20-3831A	COIL, RCF, FILTER, 663 uH	X	X			
							C2701		PROVISION		W	W		L2327	20-3869	COIL, ADJUSTABLE, 47 uH	X	X			
							C2702		PROVISION		W	W		L2351	95-3080	TRANSFORMER, CHROMA TAKE OFF	X	X			
							C2703		PROVISION		W	W		L2426	20-3907-17A	COIL, PEAKING, 27 uH	X	X			
C2226	22-7774-18A	CAPACITOR, POLYESTER, .01 MF, 110V, 100V	X	X									L2451	20-3904	COIL, ADJUSTABLE, 18 uH	X	X				
C2227	22-7774-04A	CAPACITOR, POLYESTER, .0022 MF, 110V, 100V	X	X			CR2101	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			L2476	20-3907-17A	COIL, PEAKING, 27 uH	X	X			
							CR2102	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										
C2251	22-7774-12A	CAPACITOR, POLYESTER, .01 MF, 110V, 100V	X	X			CR2103	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2201	121-1019	TRANSISTOR, PNP, SILICON	X	X			
C2252	22-7790-35	CAPACITOR, TUBULAR 55PF, 155, 50V, N750	X	X			CR2104	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2202	121-1019	TRANSISTOR, PNP, SILICON	X	X			
C2253	22-7739-12A	CAPACITOR, POLYESTER, .01 MF, 110V, 100V	X	X																	
C2254	22-7710C	CAPACITOR, ELECTROLYTIC, .47 MF, +50-10%, 50V	X	X			CR2126	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2203	121-895	TRANSISTOR, NPN, SILICON	X	X			
C2256	22-7707-06C	CAPACITOR, ELECTROLYTIC, 22 MF, +50-10%, 16V	X	X			CR2127	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2226	121-895	TRANSISTOR, NPN, SILICON	X	X			
C2256	22-7410-01	CAPACITOR, ELECTROLYTIC, 1 MF, 120V, 100V, NP	X	X			CR2128	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										
C2261	22-7712-02C	CAPACITOR, ELECTROLYTIC, 2.2 MF, +50-10%, 100V	X	X			CR2151	103-254-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2227	121-895	TRANSISTOR, NPN, SILICON	X	X			
C2276	22-7710-01C	CAPACITOR, ELECTROLYTIC, 1 MF, +50-10%, 50V	X	X			CR2152	103-254-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2351	121-895	TRANSISTOR, NPN, SILICON	X	X			
							CR2201	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2451	121-895	TRANSISTOR, NPN, SILICON	X	X			
C2277	22-7707-06C	CAPACITOR, ELECTROLYTIC 1MF +50-10% 50V	X	X			CR2202	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2452	121-895	TRANSISTOR, NPN, SILICON	X	X			
C2278	22-7740-12	CAPACITOR, POLYESTER, .01 MF, 120V, 100V	X	X																	
C2279	22-7808-07	CAPACITOR, TUBULAR, .01 MF, 120V, 50V	X	X			CR2203	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2476	121-895	TRANSISTOR, NPN, SILICON	X	X			
C2280	22-7748-10	CAPACITOR, TUBULAR .001 MF, 110V, 50V	X	X			CR2204	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2478	121-895	TRANSISTOR, NPN, SILICON	X	X			
C2281	22-7743-13	CAPACITOR, TUBULAR, 11 PF, 155, 50V, NPO	X	X										Q2551	121-895	TRANSISTOR, NPN, SILICON	X	X			
							CR2206	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2576	121-875	TRANSISTOR, NPN, SILICON	X	X			
C2287	22-7743-24	CAPACITOR, TUBULAR, 33 PF, 155, 50V, NPO	X	X			CR2207	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										
C2288	22-7613-24D	CAPACITOR, DISC, .01 MF, 110V, 50V	X	X									Q2701	121-875	TRANSISTOR, NPN, SILICON	X	X				
C2289	22-7708-11C	CAPACITOR, ELECTROLYTIC, 330 MF, +50-10%, 25V	X	X			CR2208	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2702	121-895	TRANSISTOR, NPN, SILICON	X	X			
C2291	22-7564-24	CAPACITOR, POLYESTER, 0.1 MF, 120V, 100V	X	X			CR2209	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X			Q2705	121-875	TRANSISTOR, NPN, SILICON	X	X			
C2293	22-7790-27	CAPACITOR, TUBULAR 45 PF, 155, 50V, NPO	X	X			CR2211	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										
C2293	22-7742-10	CAPACITOR, CERAMIC TUBULAR, .001 MF, 110V, 50V	X	X			CR2212	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										
C2291	22-7743-29	CAPACITOR, TUBULAR, 51 PF, 155, 50V, NPO	X	X			CR2226	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										
C2294	22-7879-05	CAPACITOR, ELECTROLYTIC, 1.5 MF, +50-10%, 16V	X	X			CR2251	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										
							CR2356	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										
							CR2357	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										
							CR2358	103-142-01	DIODE, LOW VOLTAGE, GENERAL	X	X										

LEGEND, 9-152-04 CHROMA/LUMA/VERT. MODULE (A)

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CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9-152 -03	9-152 -04	CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9-152 -03	9-152 -04	CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9-152 -03	9-152 -04
R2101	63-10236-45	RESISTOR, FILM, 1.1 M OHM, 15%, 1/4W	X	X	R2261	63-10181-64	RESISTOR, CARBON, 470 OHM, 15%, 1/4W	X	X	R2626	63-10687-16	CONTROL, ROTARY, SINGLE, 500 OHM, BLUE ABL ADJ, BRN	X	X
R2102	63-10236-11	RESISTOR, FILM, 43K OHM, 15%, 1/4W	X	X	R2262	63-10236-38	RESISTOR, FILM, 560K OHM, 15%, 1/4W	X	X	R2627		PROVISION FOR 1/4W RESISTOR	X	X
R2103	63-10236-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2263	63-10236-06	RESISTOR, FILM, 27K OHM, 15%, 1/4W	X	X	R2628	63-10687-16	CONTROL, ROTARY, SINGLE, 500 OHM, GREEN ABL ADJ, BRN	X	X
R2104	63-10236-29	RESISTOR, FILM, 220K OHM, 15%, 1/4W	X	X	R2275	63-10235-81	RESISTOR, FILM, 2.4K OHM, 15%, 1/4W	X	X	R2629	63-10687-16	CONTROL, ROTARY, SINGLE, 500 OHM, RED ABL ADJ, BROWN	X	X
R2106	63-10236-90	RESISTOR, FILM, 6.8M OHM, 15%, 1/4W	X	X	R2276	63-10235-64	RESISTOR, FILM, 470 OHM, 15%, 1/4W	X	X	R2632	63-10235-82	RESISTOR, FILM, 2.7K OHM, 15%, 1/4W	X	X
R2107	63-10236-18	RESISTOR, FILM, 82K OHM, 15%, 1/4W	X	X	R2277	63-10235-78	RESISTOR, FILM, 1.8K OHM, 15%, 1/4W	X	X	R2674	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X
R2108	63-10235-72	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2278	63-10235-64	RESISTOR, FILM, 470 OHM, 15%, 1/4W	X	X	R2675	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X
R2126	63-10687-08	CONTROL, ROTARY, 2K OHM, 170V, VERTICAL SIZE YELLOW	X	X	R2279	63-10235-64	RESISTOR, FILM, 470 OHM, 15%, 1/4W	X	X	R2676	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X
R2127	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2281	63-10235-74	RESISTOR, FILM, 1.2K OHM, 15%, 1/4W	X	X	R2677	63-10235-78	RESISTOR, FILM, 1.8K OHM, 15%, 1/4W	X	X
R2128	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2282	63-10235-74	RESISTOR, FILM, 1.2K OHM, 15%, 1/4W	X	X	R2678	63-10235-72	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X
R2129	63-10243-99	RESISTOR, FILM, 1.5K OHM, 15%, 1/2W	X	X	R2283	63-10236-02	RESISTOR, FILM, 18K OHM, 15%, 1/4W	X	X	R2679	63-10235-39	RESISTOR, FILM, 12K OHM, 15%, 1/4W	X	X
R2130	63-7813	RESISTOR, CARBON, 4.7K OHM, 110V, 1/2W	X	X	R2284	63-10235-78	RESISTOR, FILM, 1.8K OHM, 15%, 1/4W	X	X	R2681	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X
R2131	63-10236-36	RESISTOR, FILM, 470K OHM, 15%, 1/4W	X	X	R2326	63-10235-70	RESISTOR, FILM, 820 OHM, 15%, 1/4W	X	X	R2701	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X
R2132	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2327	63-10235-94	RESISTOR, FILM, 8.2K OHM, 15%, 1/4W	X	X	R2702	63-10235-64	RESISTOR, FILM, 470 OHM, 15%, 1/4W	X	X
R2133	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2328	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2708	63-10235-69	RESISTOR, FILM, 750 OHM, 15%, 1/4W	X	X
R2134	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2329	63-10236-44	RESISTOR, FILM, 1.0 MEG OHM, 15%, 1/4W	X	X	R2709	63-10235-69	PROVISION FOR 1/4W RESISTOR	X	X
R2151	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2331	63-10687-12	CONTROL, ROTARY, SINGLE, 10K OHM, APC ADJ, WHITE	X	X	R2710	63-10235-67	RESISTOR, FILM, 820 OHM, 15%, 1/4W	X	X
R2152	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2332	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2716	63-10235-67	RESISTOR, FILM, 390 OHM, 15%, 1/4W	X	X
R2153	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2333	63-10235-84	RESISTOR, FILM, 3.3K OHM, 15%, 1/4W	X	X	R2717	63-10235-40	RESISTOR, FILM, 47 OHM, 15%, 1/4W	X	X
R2154	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2334	63-10235-65	RESISTOR, FILM, 510 OHM, 15%, 1/4W	X	X	R2718	63-10235-69	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X
R2155	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2336	63-10236-04	RESISTOR, FILM, 22K OHM, 15%, 1/4W	X	X	R2719	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2156	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2351	63-10236-70	RESISTOR, FILM, 820 OHM, 15%, 1/4W	X	X	R2720	63-10235-63	RESISTOR, FILM, 430 OHM, 15%, 1/4W	X	X
R2157	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2353	63-10235-70	RESISTOR, FILM, 2.2K OHM, 15%, 1/4W	X	X	R2721	63-10235-66	RESISTOR, FILM, 680 OHM, 15%, 1/4W	X	X
R2158	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2356	63-10181-64	RESISTOR, CARBON, 470 OHM, 15%, 1/4W	X	X	R2722	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X
R2159	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2357	63-10235-94	RESISTOR, FILM, 8.2K OHM, 15%, 1/4W	X	X	R2723	63-10235-69	RESISTOR, FILM, 750 OHM, 15%, 1/4W	X	X
R2160	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2376	63-10181-77	RESISTOR, CARBON, 1K OHM, 15%, 1/4W	X	X	R2724	63-10235-67	RESISTOR, FILM, 820 OHM, 15%, 1/4W	X	X
R2161	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2377	63-10236-46	RESISTOR, FILM, 680 OHM, 15%, 1/4W	X	X	R2725	63-10235-70	RESISTOR, FILM, 820 OHM, 15%, 1/4W	X	X
R2162	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2462	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X	R2726	63-10235-77	RESISTOR, FILM, 1.8K OHM, 15%, 1/4W	X	X
R2163	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2463	63-10235-96	RESISTOR, FILM, 10K OHM, 15%, 1/4W	X	X	R2727	63-10235-72	RESISTOR, FILM, 1.0K OHM, 15%, 1/4W	X	X
R2164	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2464	63-10235-92	RESISTOR, FILM, 6.8K OHM, 15%, 1/4W	X	X	R2728	63-10687-03	CONTROL, ROTARY, SINGLE, 500 OHM, GREEN GAIN BLUE	X	X
R2165	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2465	63-10235-59	RESISTOR, FILM, 500 OHM, 15%, 1/4W	X	X	R2729	63-10235-68	RESISTOR, FILM, 680 OHM, 15%, 1/4W	X	X
R2166	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2466	63-10235-65	RESISTOR, FILM, 510 OHM, 15%, 1/4W	X	X	R2730	63-10235-68	RESISTOR, FILM, 680 OHM, 15%, 1/4W	X	X
R2167	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2467	63-10687-02	CONTROL, ROTARY, SINGLE, 300 OHM, COMBED CHROMA AMP, ALL, BRN	X	X	R2731	63-10235-68	RESISTOR, FILM, 680 OHM, 15%, 1/4W	X	X
R2168	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2468	63-10235-52	RESISTOR, FILM, 150 OHM, 15%, 1/4W	X	X	R2732	63-10235-68	RESISTOR, FILM, 680 OHM, 15%, 1/4W	X	X
R2169	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2469	63-10235-62	RESISTOR, FILM, 2.7K OHM, 15%, 1/4W	X	X	R2733	63-10235-68	RESISTOR, FILM, 680 OHM, 15%, 1/4W	X	X
R2170	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2471	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2734	63-10235-68	RESISTOR, FILM, 3.9K OHM, 15%, 1/4W	X	X
R2171	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2472	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2735	63-10235-68	RESISTOR, FILM, 3.9K OHM, 15%, 1/4W	X	X
R2172	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2473	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2736	63-10235-68	RESISTOR, FILM, 3.9K OHM, 15%, 1/4W	X	X
R2173	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2474	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2737	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X
R2174	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2475	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2738	63-10687-03	CONTROL, ROTARY, SINGLE, 500 OHM, RED GAIN BLUE	X	X
R2175	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2476	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2739	63-10235-68	RESISTOR, FILM, 680 OHM, 15%, 1/4W	X	X
R2176	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2477	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2740	63-10235-68	RESISTOR, FILM, 680 OHM, 15%, 1/4W	X	X
R2177	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2478	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2741	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2178	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2479	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2742	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2179	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2480	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X	R2743	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2180	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2481	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2744	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2181	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2482	63-10235-59	RESISTOR, FILM, 300 OHM, 15%, 1/4W	X	X	R2745	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2182	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2483	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X	R2746	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2183	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2484	63-10235-64	RESISTOR, FILM, 470 OHM, 15%, 1/4W	X	X	R2747	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2184	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2485	63-10687-03	CONTROL, ROTARY, SINGLE, 500 OHM, COMBED CHROMA AMP, ALL, BLUE	X	X	R2748	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2185	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2486	63-10235-65	RESISTOR, FILM, 510 OHM, 15%, 1/4W	X	X	R2749	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2186	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2487	63-10235-65	RESISTOR, FILM, 510 OHM, 15%, 1/4W	X	X	R2750	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2187	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2488	63-10235-52	RESISTOR, FILM, 150 OHM, 15%, 1/4W	X	X	R2751	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2188	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2489	63-10235-62	RESISTOR, FILM, 2.7K OHM, 15%, 1/4W	X	X	R2752	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2189	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2490	63-10235-52	RESISTOR, FILM, 150 OHM, 15%, 1/4W	X	X	R2753	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2190	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2491	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2754	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2191	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2492	63-10235-59	RESISTOR, FILM, 300 OHM, 15%, 1/4W	X	X	R2755	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2192	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2493	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X	R2756	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2193	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2494	63-10235-64	RESISTOR, FILM, 470 OHM, 15%, 1/4W	X	X	R2757	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2194	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2495	63-10687-03	CONTROL, ROTARY, SINGLE, 500 OHM, COMBED CHROMA AMP, ALL, BLUE	X	X	R2758	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2195	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2496	63-10235-65	RESISTOR, FILM, 510 OHM, 15%, 1/4W	X	X	R2759	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2196	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2497	63-10235-65	RESISTOR, FILM, 510 OHM, 15%, 1/4W	X	X	R2760	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2197	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	R2498	63-10235-52	RESISTOR, FILM, 150 OHM, 15%, 1/4W	X	X	R2761	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2198	63-10235-88	RESISTOR, FILM, 4.7K OHM, 15%, 1/4W	X	X	R2499	63-10235-62	RESISTOR, FILM, 2.7K OHM, 15%, 1/4W	X	X	R2762	181-1005-03	WIRE, PRECUT, #22 GAUGE	X	X
R2199	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	R2500	63-10235-52	RESISTOR, FILM, 150 OHM,							

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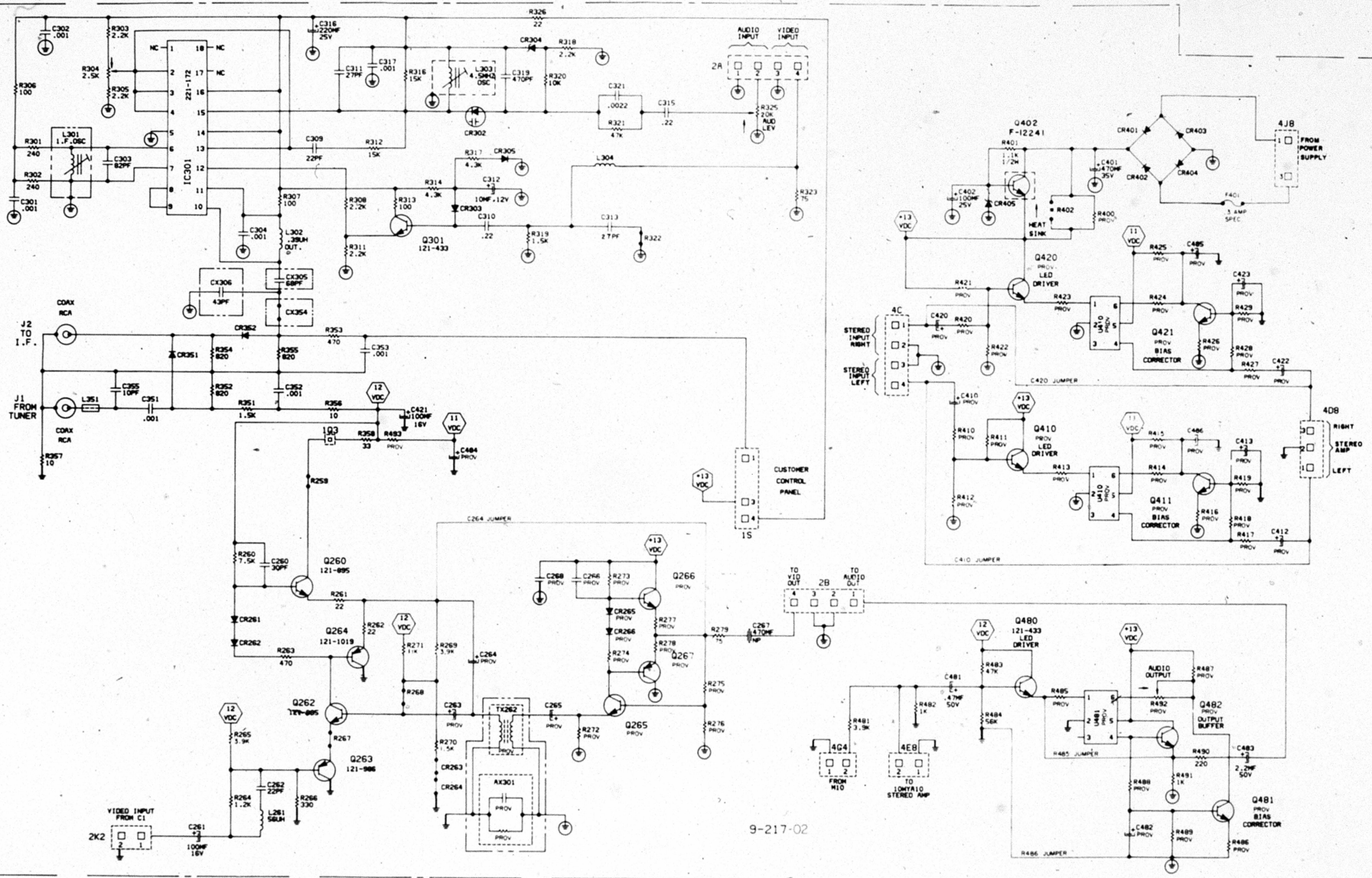
CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	SYMBOL NAME	DESCRIPTION	N-100-81	N-100-82
0888H			PROVISION	X	
0885C	22-7540-03	DP734	DRP.; 0.33 MFD + .18PCT 480V; POLYPROPYLENE	X X	
0884H	22-7540-03	DP734	DRP.; 0.33 MFD + .18PCT 480V; POLYPROPYLENE	X X	
0883H	22-7881		DRP.; 1.000 MFD 28PCT 35V; NP ELECTROLYTIC	X X	
0882H	22-7881		DRP.; 1.000 MFD 28PCT 35V; NP ELECTROLYTIC	X X	
0881H	22-7731-2NA	DP734	DRP.; 0.1 MFD 18PCT 180V; POLY PROPYLENE	X X	
0879	22-7540-03	DP734	DRP.; 0.33 MFD + .18PCT 480V; POLYPROPYLENE	X X	
0871	22-7540-32	DP734	DRP.; 0.97 MFD 18PCT 180V; POLY PROPYLENE	X X	
0872	22-7860-04	DEL8	DRP.; 4.7 MFD 28PCT 25V; ELECTRO	X X	
08625	103-284A	DR54	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08626	103-284A	DR54	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08627	103-284A	DR54	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08628	103-284A	DR54	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08645	103-284A	DR54	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08646	103-284A	DR54	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08650	103-142-01	DR53	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08654	103-142-01	DR53	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08655	103-142-01	DR53	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08656	103-142-01	DR53	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08658	103-142-01	DR53	DIODE; LOW VOLTAGE GENERAL; SILICON	X X	
08577	32-2240-00A	BPARK ORP		X X	
08578	32-2240-00A	BPARK ORP		X X	
08579	32-2240-00A	BPARK ORP		X X	
LX8373	20-3160-01	LH41	COIL; ; TUNABLE; WIDTH CONTROL	X	
LX8373	20-3160-02		COIL; ; TUNABLE; WIDTH CONTROL	X	
LX8376	20-3160-01	LH41	COIL; ; TUNABLE; WIDTH CONTROL	X	
LX8376	20-3160-02		COIL; ; TUNABLE; WIDTH CONTROL	X	
LX8377	20-3160-01	LH41	COIL; ; TUNABLE; WIDTH CONTROL	X	
LX8377	20-3160-02		COIL; ; TUNABLE; WIDTH CONTROL	X	
08501	63-10046		CONTROL; ROTARY; DUAL	X X	
08502	63-10249-01	RA25	REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08503	63-10249-02	RA25	REG.; FILM; 5K OHM SPOT 1/2W	X X	
08504	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08505	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08506	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08507	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08508	63-10046		CONTROL; ROTARY; DUAL	X X	
08509	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08511	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08512	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08513	63-10046-01		CONTROL	X X	
08514	63-10046		CONTROL; ROTARY; DUAL	X X	
08516	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08517	63-10046		CONTROL	X X	
08518	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08519	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08521	63-10249-02	RA25	REG.; FILM; 5K OHM SPOT 1/2W	X X	
08522	63-10249-01		REG.; FILM; 2.4K OHM SPOT 1/2W	X X	
08523	63-10046-72		REG.; WM; 100 OHM SPOT 3W	X X	
08525	63-10114		CONTROL; 300 OHM 28PCT 3W	X X	
08527	63-10046-74		REG.; WM; 120 OHM SPOT 3W	X X	
08528	63-10046-72		REG.; WM; 100 OHM SPOT 3W	X X	
08529	63-10114		CONTROL; 300 OHM 28PCT 3W	X X	
08530	63-10114		CONTROL; 300 OHM 28PCT 3W	X X	

CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	SYMBOL NAME	DESCRIPTION	N-100-81	N-100-82
08530	63-10046-74		REG.; WM; 120 OHM SPOT 3W	X X	
08540	63-10046-72		REG.; WM; 100 OHM SPOT 3W	X X	
08541	63-10114		CONTROL; 300 OHM 28PCT 3W	X X	
08542	63-10046-74		REG.; WM; 120 OHM SPOT 3W	X X	
08551	63-10046		CONTROL	X X	
08552	63-10249-00		REG.; FILM; 100 OHM SPOT 1/2W	X X	
08553	63-10046-01		CONTROL	X X	
08554	63-10249-02		REG.; FILM; 150 OHM SPOT 1/2W	X X	
08555	63-10249-00		REG.; FILM; 100 OHM SPOT 1/2W	X X	
08556	63-10249-00		REG.; FILM; 100 OHM SPOT 1/2W	X X	
08557	63-10046-01		CONTROL	X X	
08558	63-10046-00		REG.; FILM; 4.7K OHM SPOT 2W	X X	
08561	63-1023-01		CONTROL	X X	
08562	63-1023-01		CONTROL	X X	
08563	63-10046-00		REG.; FILM; 4.7K OHM SPOT 2W	X X	
08578	63-10046-00		REG.; FILM; 4.7K OHM SPOT 2W	X X	
08571	63-1023-01		CONTROL	X X	
08572	63-10235-00	RA12	REG.; FILM; 4.7K OHM SPOT 1/4W	X X	
08573	63-10236-12	RA12	REG.; FILM; 47K OHM SPOT 1/4W	X X	
08574	63-10239-07		REG.; FILM; 400 OHM SPOT 1/2W	X X	
08575	63-10239-00		REG.; FILM; 400 OHM SPOT 1/2W	X X	
08576	63-10239-00		REG.; FILM; 400 OHM SPOT 1/2W	X X	
08577	63-7771	RA25	REG.; CARBON; 470 OHM 18PCT 1/2W	X X	
08578	63-7771	RA25	REG.; CARBON; 470 OHM 18PCT 1/2W	X X	
08579	63-7771	RA25	REG.; CARBON; 470 OHM 18PCT 1/2W	X X	
78501	75-3444-01		TRANSFORMER; VERTICAL SHUT-DOWN	X X	
F-10640			PC BOARD; PIERCED	X	
F-17110			PC BOARD ASBY; WITH COMPONENTS	X	
F-17114			COMPONENT; SEQUENCE ASSEMBLY	X	
F-17451			PC BOARD ASBY; WITH COMPONENTS	X	
F-17452			COMPONENT; SEQUENCE ASSEMBLY	X	
20-246			SPECIFICATION; MODULE PERFORMANCE	X X	
20-307			MODULE; WORKMANSHIP APPEARANCE	X X	
50-301	04		CONNECTOR; WIRE; 4 CONTACT	X	
70-3054	SHCON		CONNECTOR; 4 CIRCUIT SHUNT	X X	
86-744	STAKE1		TERMINAL; PIN, 8 AND 10H SQUARE	X X	
71-2053	JUMP		WIRE; SOLID, SINGLE CONDUCTOR; 22 GA TINNED	X X	
101-1112			PRODUCTION; COUNT LABEL	X X	
101-6234-11			LABEL; DATE CODE	X X	
140-331			TAPE; PAPER; WHITE 1/4 WIDE	X X	
141-1005-03			WIRE; PRECUT; 22 GAUGE	X X	
204-547-20			PC BOARD; BULK	X	
204-014-01			PRINTED CIRCUIT; REGISTRATION, PROJECTION TV	X	
204-1260			PRINTED CIRCUIT; MASTER REGISTER	X	

LEGEND, 9-180-01 REGISTRATION BOARD

D3

D4



NOTES:
1. RESISTORS ARE 1/4 WATT, 5% TOLERANCE UNLESS OTHERWISE SPECIFIED.
2. CAPACITORS ARE 1% MICROFARADS UNLESS OTHERWISE SPECIFIED.

NOTES: (USED WITH CIRCUIT REFERENCE DESIGNATORS):
A. P/L = SEE PARTS LIST FOR APPLICABLE USAGE.
B. - = JUMPER WIRE USED INSTEAD.
C. PROV. = PROVISION ON PRINTED CIRCUIT BOARD.

TO DC
VOLTAGE
SUPPLY

DC
VOLTAGE
SOURCE

DOUBLE
ISOLATION
GROUND

DC
GROUND

U401
U410
U481
PHOTO-OPTIC
COUPLER

SCHEMATIC, 9-217-02 AUDIO/VIDEO ISOLATION MODULE

D5

D6

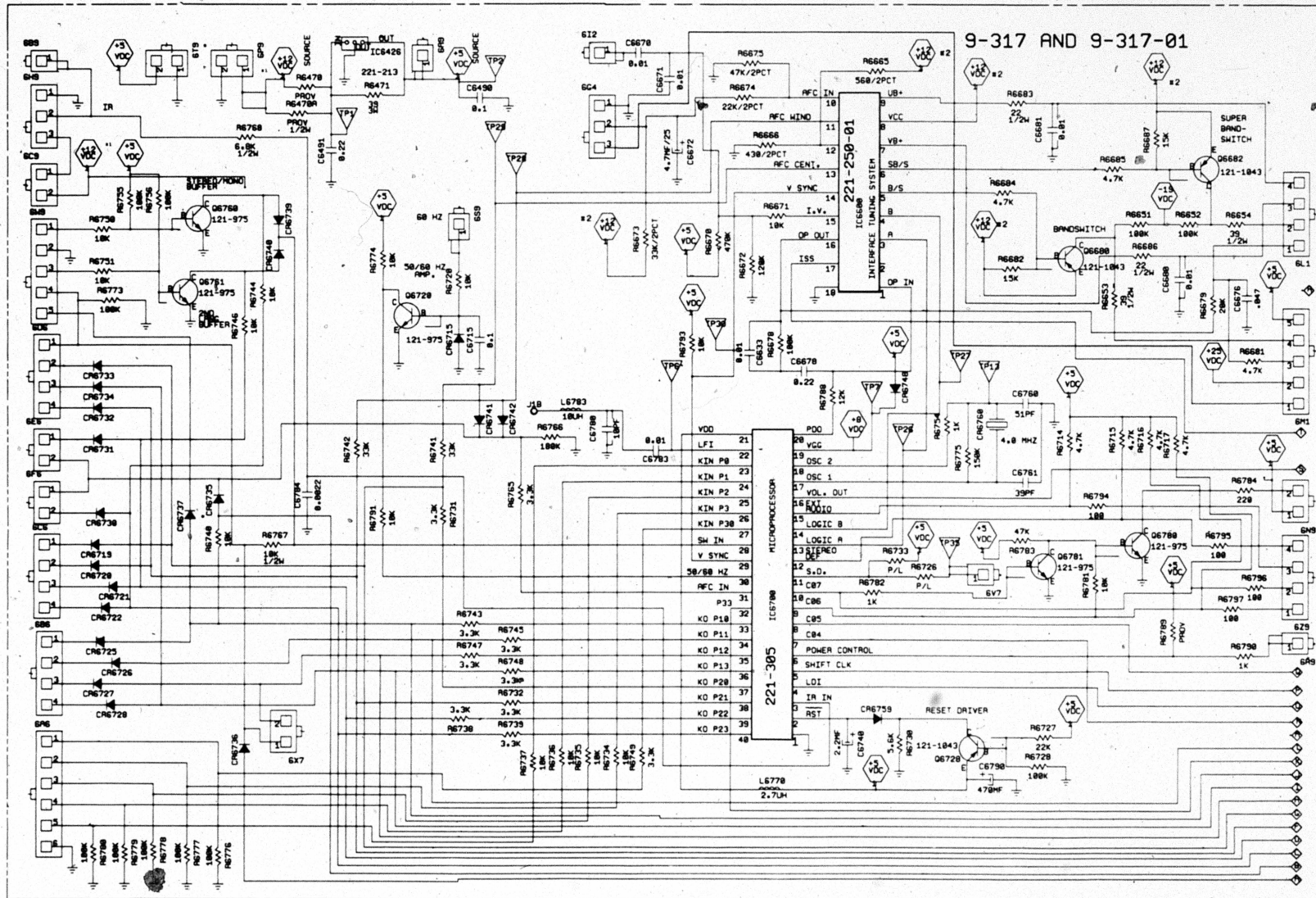
CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9- 217	9- 217-01	9-217- 02	9-217- 01A	CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9- 217	9- 217-01	9-217- 02	9-217- 01A	CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9- 217	9- 217-01	9-217- 02	9-217- 01A
11 AX301	105-148	R/C NETWORK, ANTENNA ISOLATION	X	X	X	X	CR404	103-295-01A	DIODE, LOW VOLTAGE	X	X	X	X	R314	63-10235-87	RESISTOR, FILM, 4.3K OHM, 15%, 1/4W	X	X	X	X
							CR405	104-219-22A	DIODE, ZENER, 3V, 0.5W	X	X	X	X	R315						
CR80	22-1780-23	CAPACITOR, TUNABLE, 20PF, 15V, 50V	X	X	X	X	IC301	221-172	INTEGRATED CIRCUIT, VIDEO MODULATOR	X	X	X	X	R316	63-10236	RESISTOR, FILM, 15K OHM, 15%, 1/4W	X	X	X	X
CR81	22-1707-08C	CAPACITOR, ELECTROLYTIC, 100MF, +50-105, 16V	X	X	X	X	L281	20-3907-21A	COIL, INDUCTOR, AXIAL, 56uH	X	X	X	X	R317	63-10235-87	RESISTOR, FILM, 4.3K OHM, 15%, 1/4W	X	X	X	X
CR82	22-1748-20	CAPACITOR, TUNABLE, 20PF, 15V, 50V	X	X	X	X	L301	20-3937-03	COIL, OSC, 1 P	X	X	X	X	R318	63-10235-80	RESISTOR, FILM, 2.2K OHM, 15%, 1/4W	X	X	X	X
CR83	22-1707-08C	CAPACITOR, ELECTROLYTIC, 100MF, +50-105, 16V	X	X	X	X	L302	20-3948-08	COIL, OUT, 35uH	X	X	X	X	R319	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X
CR84	22-1707-08C	CAPACITOR, ELECTROLYTIC, 100MF, +50-105, 16V	X	X	X	X	L303	20-3980	COIL, OSC, 4.3uH	X	X	X	X	R320	63-10235-86	RESISTOR, FILM, 10K OHM, 15%, 1/4W	X	X	X	X
CR85	22-1707-08C	CAPACITOR, ELECTROLYTIC, 100MF, +50-105, 16V	X	X	X	X	L304	20-3907-23A	COIL, TRAP, 82MHZ	X	X	X	X	R321	63-10236-12	RESISTOR, FILM, 47K OHM, 15%, 1/4W	X	X	X	X
CR86	22-1748-10	CAPACITOR, TUNABLE, 8 PPF, 10V, 50V	X	X	X	X	L350	149-417	FERRITE BEAD	X	X	X	X	R322	91-20530	0000-03-00 WIRE SOLID, SINGLE CONDUCTOR, 22GA	X	X	X	X
CR87	22-1748-12	CAPACITOR, ELECTROLYTIC, 470UF, 16V, NP	X	X	X	X	Q262	121-895	TRANSISTOR, NPN, S	X	X	X	X	R323	63-10235-45	RESISTOR, FILM, 75 OHM, 15%, 1/4W	X	X	X	X
CR88	22-1773-24A	CAPACITOR, POLYESTER, 0.1MF, 15V, 100V	X	X	X	X	Q263	121-986	TRANSISTOR, PNP, S	X	X	X	X	R324						
CR89	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q264	121-1019	TRANSISTOR, PNP, S	X	X	X	X	R325	63-10857-13	CONTROL, ROTARY, SINGLE, 20K OHM, AUDIO LEV	X	X	X	X
CR90	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q265	121-895	TRANSISTOR, NPN, S	X	X	X	X	R326	63-10559-32	RESISTOR, FILM, 22 OHM, 25%, 1/4W (F.S.)	X	X	X	X
CR93	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q266	121-895	TRANSISTOR, NPN, S	X	X	X	X	R327	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X
CR94	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q267	121-1019	TRANSISTOR, PNP, S	X	X	X	X	R328	63-10559-24	RESISTOR, FILM, 10 OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR95	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q301	121-433	TRANSISTOR, NPN, S	X	X	X	X	R329	63-10235-70	RESISTOR, FILM, 820 OHM, 15%, 1/4W	X	X	X	X
CR96	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q402	F-12241	TRANSISTOR, NPN, S / 121-966-02 / 2	X	X	X	X	R330	63-10235-24	RESISTOR, FILM, 10 OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR97	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	19-997	CLIP, TRANSISTOR	X	X	X	X	R331	63-10235-84	RESISTOR, FILM, 470 OHM, 15%, 1/4W	X	X	X	X	
CR98	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	126-2073	HEATING, TRANSISTOR	X	X	X	X	R332	63-10235-24	RESISTOR, FILM, 10 OHM, 15%, 1/4W	X	X	X	X	
CR99	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	205-305	HEATING, COMPOUND	X	X	X	X	R333	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X	
CR100	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q410	121-433	TRANSISTOR, NPN, S	X	X	X	X	R334	63-10559-36	RESISTOR, FILM, 33 OHM, 25%, 1/4W (F.S.)	X	X	X	X
CR101	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q411	121-433	TRANSISTOR, NPN, S	X	X	X	X	R335	63-10559-24	RESISTOR, FILM, 10 OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR102	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q420	121-433	TRANSISTOR, NPN, S	X	X	X	X	R336	63-10235-36	RESISTOR, FILM, 33 OHM, 25%, 1/4W (F.S.)	X	X	X	X
CR103	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q421	121-433	TRANSISTOR, NPN, S	X	X	X	X	R337	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR104	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q480	121-433	TRANSISTOR, NPN, S	X	X	X	X	R338	63-10235-14	RESISTOR, FILM, 56K OHM, 15%, 1/4W	X	X	X	X
CR105	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q481	121-433	TRANSISTOR, NPN, S	X	X	X	X	R339	63-10235-58	RESISTOR, FILM, 270 OHM, 15%, 1/2W	X	X	X	X
CR106	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	Q482	121-895	TRANSISTOR, NPN, S	X	X	X	X	R340	63-10236-32	RESISTOR, FILM, 330K OHM, 15%, 1/4W	X	X	X	X
CR107	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R280	63-10235-83	RESISTOR, FILM, 7.5K OHM, 15%, 1/4W	X	X	X	X	R341	63-10235-96	RESISTOR, FILM, 10K OHM, 15%, 1/4W	X	X	X	X
CR108	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R289	91-20530	0000-03-00 WIRE SOLID, SINGLE CONDUCTOR, 22GA	X	X	X	X	R342	63-10235-86	RESISTOR, FILM, 10K OHM, 15%, 1/4W	X	X	X	X
CR109	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R291	63-10235-32	RESISTOR, FILM, 22 OHM, 15%, 1/4W (F.S.)	X	X	X	X	R343	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X	X	X
CR110	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R292	63-10235-32	RESISTOR, FILM, 22 OHM, 15%, 1/4W (F.S.)	X	X	X	X	R344	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR111	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R293	63-10235-84	RESISTOR, FILM, 470 OHM, 15%, 1/4W	X	X	X	X	R345	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR112	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R294	63-10235-74	RESISTOR, FILM, 1.2K OHM, 15%, 1/4W	X	X	X	X	R346	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR113	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R295	63-10235-86	RESISTOR, FILM, 3.3K OHM, 15%, 1/4W	X	X	X	X	R347	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR114	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R296	63-10235-80	RESISTOR, FILM, 330 OHM, 15%, 1/4W	X	X	X	X	R348	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR115	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R297	63-10235-32	RESISTOR, FILM, 22 OHM, 15%, 1/4W	X	X	X	X	R349	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR116	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R298	63-10235-12	RESISTOR, FILM, 47K OHM, 15%, 1/4W	X	X	X	X	R350	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR117	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R299	91-5053	WIRE, BARE, #22 GA	X	X	X	X	R351	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR118	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R300	63-10235-97	RESISTOR, FILM, 11K OHM, 15%, 1/4W	X	X	X	X	R352	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR119	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R301	63-10235-74	RESISTOR, FILM, 1.2K OHM, 15%, 1/4W	X	X	X	X	R353	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR120	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R302	91-5053	WIRE, BARE, #22 GA	X	X	X	X	R354	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR121	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R303	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R355	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR122	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R304	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R356	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR123	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R305	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R357	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR124	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R306	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R358	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR125	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R307	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R359	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR126	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R308	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R360	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR127	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R309	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R361	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR128	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R310	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R362	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR129	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R311	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R363	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR130	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R312	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R364	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR131	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R313	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R365	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR132	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R314	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R366	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR133	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R315	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R367	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR134	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R316	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R368	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR135	22-1748-12D	CAPACITOR, DISC, 0.01MF, 110V, 50V	X	X	X	X	R317	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W	X	X	X	X	R369	63-10235-76	RESISTOR, FILM, 1.5K OHM, 15%, 1/4W (F.S.)	X	X	X	X
CR136	22-174																			

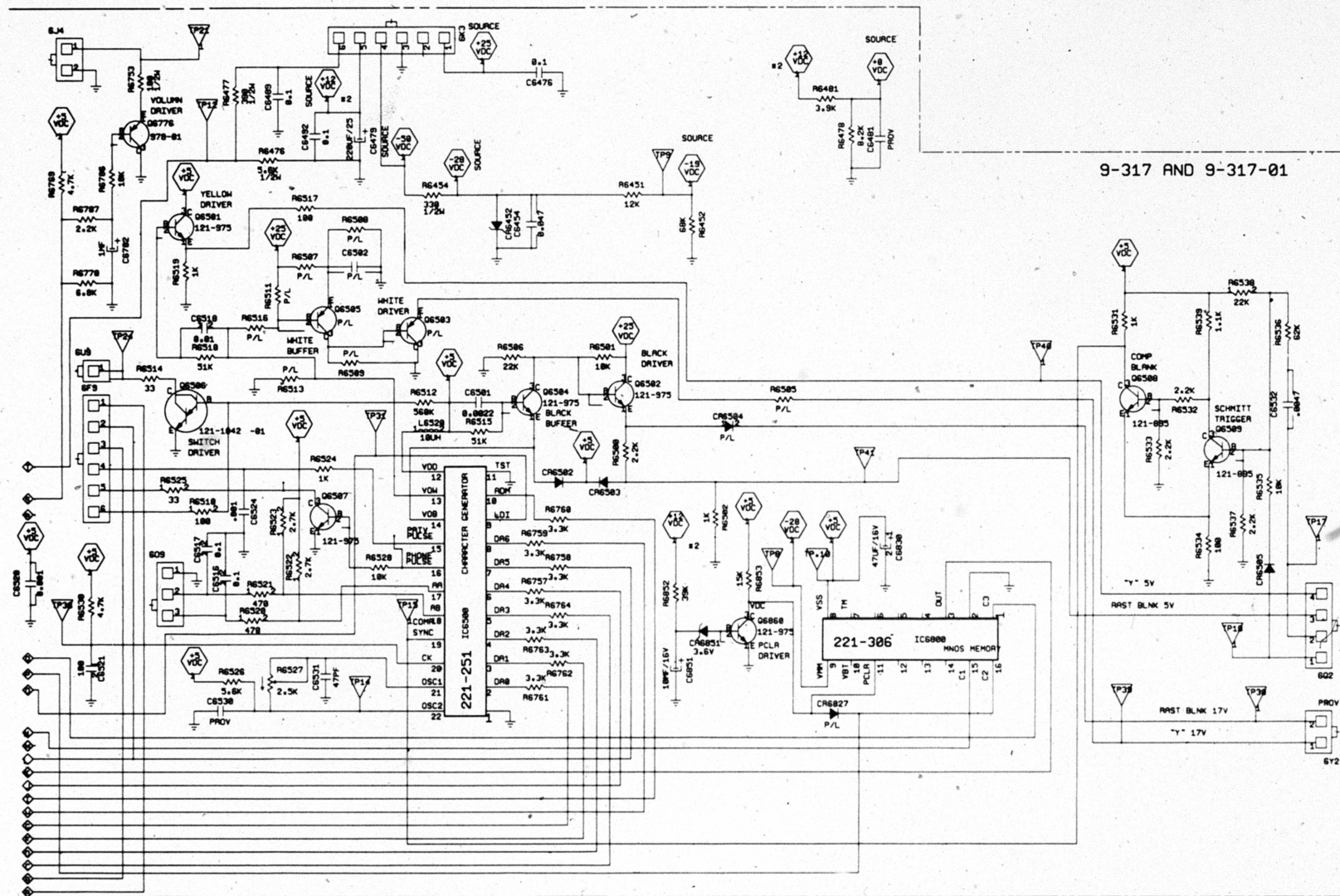
CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	9- 217	9- 217-01	9-217 -02	9-217 -01A
R417	63-10235-54	RESISTOR, FILM, 220 OHM, 15%, 1/4W	X	X	W	X
R418	63-10235-75	RESISTOR, FILM, 1.3K OHM, 15%, 1/4W	X	X	W	X
R419	63-10235-51	RESISTOR, FILM, 130 OHM, 15%, 1/4W	X	X	W	X
R420	63-10235-56	RESISTOR, FILM, 220 OHM, 15%, 1/4W	X	X	W	X
R421	63-10236-12	RESISTOR, FILM, 47K OHM, 15%, 1/4W	X	X	W	X
R422	63-10236-14	RESISTOR, FILM, 56K OHM, 15%, 1/4W	X	X	W	X
R423	63-10243-58	RESISTOR, FILM, 270 OHM, 15%, 1/2W	X	X	W	X
R424	63-10236-32	RESISTOR, FILM, 330K OHM, 15%, 1/4W	X	X	W	X
R425	63-10235-56	RESISTOR, FILM, 10K OHM, 15%, 1/4W	X	X	W	X
R426	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X	W	X
R427	63-10235-56	RESISTOR, FILM, 220 OHM, 15%, 1/4W	X	X	W	X
R428	63-10235-75	RESISTOR, FILM, 1.3K OHM, 15%, 1/4W	X	X	W	X
R429	63-10235-51	RESISTOR, FILM, 130 OHM, 15%, 1/4W	X	X	W	X
R481	63-10235-66	RESISTOR, FILM, 3.9K OHM, 15%, 1/4W	X	X	X	X
R482	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	X	X
R483	63-10236-12	RESISTOR, FILM, 47K OHM, 15%, 1/4W	X	X	X	X
R484	63-10236-14	RESISTOR, FILM, 56K OHM, 15%, 1/4W	X	X	X	X
R485	63-10243-58	RESISTOR, FILM, 270 OHM, 15%, 1/2W	X	X		X
R489	91-5053	WIRE, BARE, 22 GA			X	
R488	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X		X
R487	63-10235-56	RESISTOR, FILM, 10K OHM, 15%, 1/4W	X	X	W	X
R486	91-5053	WIRE, PRECUT, 22 GA			X	
R489	63-10235-75	RESISTOR, FILM, 1.3K OHM, 15%, 1/4W	X	X	W	X
R489	63-10235-51	RESISTOR, FILM, 130 OHM, 15%, 1/4W	X	X	W	X
R490	63-10235-56	RESISTOR, FILM, 220 OHM, 15%, 1/4W	X	X	X	X
R491	63-10235-72	RESISTOR, FILM, 1K OHM, 15%, 1/4W	X	X	X	X
R487	63-10887-21	CONTROL, SINGLE, ROTARY, 30K OHM, DIT	X	X	W	X
R493	63-10235-48	RESISTOR, FILM, 100 OHM, 15%, 1/4W	X	X	W	X
S TX282	95-5451	TRANSFORMER, BIDEAM	X	X	W	X
U401	162-18-02	PHOTO-OPTIC COUPLER	X	X	W	X
U410	162-18-02	PHOTO-OPTIC COUPLER	X	X	W	X
U481	162-18-02	PHOTO-OPTIC COUPLER	X	X	W	X
J1	78-2285-01	JACK, SINGLE	X			
J1	A-3036-03	JACK, COAX, RCA		X	X	X
J2	78-2285-01	JACK, SINGLE	X			
J2	A-3036-05	JACK, COAX, RCA		X	X	X
J03	86-799	CONNECTOR, STAKES (17/156")	X	X	X	X
J5	86-799	CONNECTOR, 3 STAKES (47/156")	X	X	X	X
2A	86-799	CONNECTOR, STAKES (47/156")	X	X	X	X
2B	86-799	CONNECTOR, STAKES (47/156")	X	X	X	X
2K2	86-799	CONNECTOR, STAKES (27/156")	X	X	X	X
5C	86-799	CONNECTOR, STAKES (47/156")	X	X	X	X
4D5	86-799	CONNECTOR, STAKES (27/156")	X	X	X	X
4E5	86-799	CONNECTOR, STAKES (27/156")	X	X	X	X
4S4	86-799	CONNECTOR, STAKES (27/156")	X	X	X	X
4J8	86-799	CONNECTOR, STAKES (27/156")	X			
4J8	86-799	CONNECTOR, STAKES (23/312")		X	X	X
F400	136-123-05	FUSE, 0.5 Amp SPECIAL (219-840-01 CLIPS)		X	X	X
24-2684-02		COVER	X	X	X	X
43-7887		HOUSING	X	X	X	X
54-848		SPRING NUT	X	X	X	X
114-803		SCREW	X	X	X	X
204-951		PC BOARD	X			
204-951-05		PC BOARD		X	X	X
W1	9-20530	0000-03-03 WIRE, SOLID, SINGLE CONDUCTOR, 22 GA	X	X	X	X
W3	9-20530	0000-03-03 WIRE, SOLID, SINGLE CONDUCTOR, 22 GA	X	X		
W4	9-20530	0000-03-03 WIRE, SOLID, SINGLE CONDUCTOR, 22 GA	X	X	W	X
W5	9-20530	0000-03-03 WIRE, SOLID, SINGLE CONDUCTOR, 22 GA	X	X	W	X

LEGEND, 9-217-02 AUDIO/VIDEO ISOLATION MODULE (B)

D9

D10





NOTES:

1. RESISTORS ARE 1/4 WATT, 5 PERCENT TOLERANCE UNLESS OTHERWISE SPECIFIED.
2. CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.

NOTES: (VALUE TAGS WITH SPECIAL MEANINGS)

- A. P/L = SEE PARTS LIST FOR APPLICABLE USAGE.
- B. JUMPER = JUMPER WIRE USED INSTEAD OF NORMAL PART
- C. PROV = PROVISION FOR A PHYSICAL PART IN THE LAYOUT ONLY.

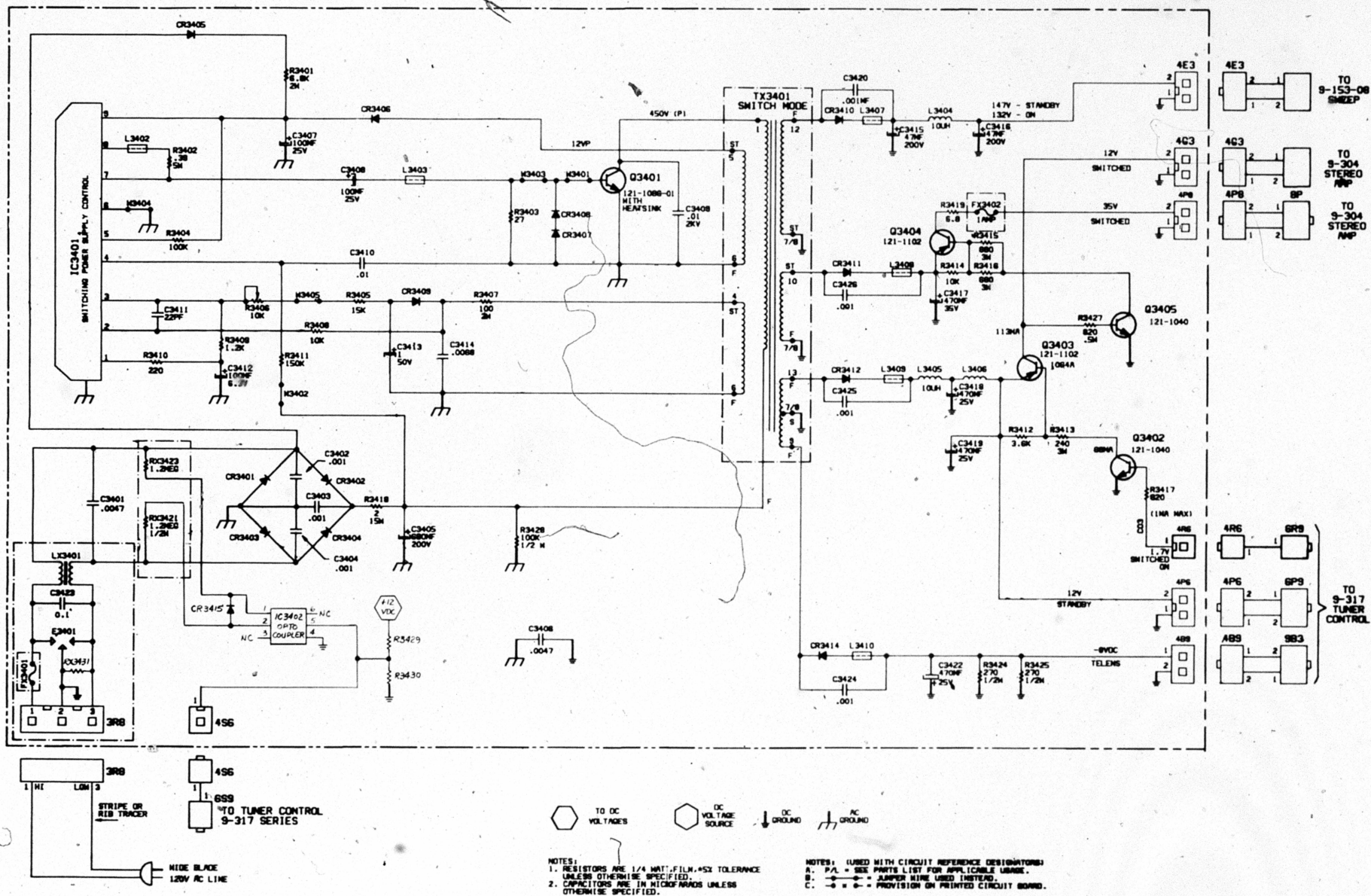
CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	SYMBOL NAME	DESCRIPTION	Q-317	Q-318	Q-319	Q-320
C8454	22-7813-18D	C8Q24	CMF., 47000 PFD +08PCT -28PCT 50V; DISC	X	X		
C8478	22-7748-24A	C8Q12A	CMF., 0.1 NFD 28PCT 180V; POLY	X	X		
C8479	22-7788-18C	CE48	CMF., 220 HFD +50-18PCT 25V; ELECTRO	X	X		
C8481		C8Q24	PROVISION	X			
C8483		C8Q4	PROVISION	X			
C8488	22-7748-24A	C8Q12A	CMF., 0.1 NFD 28PCT 180V; POLY	X	X		
C8489	22-7748-24A	C8Q12A	CMF., 0.1 NFD 28PCT 180V; POLY	X	X		
C8491	22-7748-28A	C8Q8	CMF., 0.22 HFD 28PCT 180V; POLY	X	X		
C8492	22-7748-24A	C8Q12A	CMF., 0.1 NFD 28PCT 180V; POLY	X	X		
C8561	22-7748-94A	C8Q12	CMF., 0.0022 HFD 28PCT 180V; POLY	X	X		
C8562	22-7828-28C	C8Q12	CMF., 47 HFD 18PCT 50V; DISC	X	X		
C8568		PROVISION		X			
C8568	22-7748-24A	C8Q12A	CMF., 0.1 NFD 28PCT 180V; POLY	X	X		
C8571	22-7748-24A	C8Q12A	CMF., 0.1 NFD 28PCT 180V; POLY	X	X		
C8581	22-7814-24D	C08	CMF., 10000 PFD 28PCT 50V; DISC	X	X		
C8589	22-7832-12D	C01	CMF., 1000 HFD 18PCT 50V; DISC	X	X		
C8590	22-7788-18C	C8Q12	CMF., 1000 HFD 18PCT 50V; DISC	X	X		
C8594	22-7813-18D	C01	CMF., 10000 HFD 18PCT 50V; DISC	X	X		
C8598		PROVISION		X			
C8598		PROVISION		X			
C8591	22-7838-21A		CMF., 47 HFD 18PCT 50V; DISC	X	X		
C8592	22-7738-68A		CMF., 0.0047 HFD 35CT 180V; POLY	X	X		
C8597	22-7788-18A	C8Q12	CMF., 0.01 HFD 28PCT 180V; POLY	X	X		
C8597	22-7748-18A	C8Q12	CMF., 0.01 HFD 28PCT 180V; POLY	X	X		
C8597	22-7868-84	CE18	CMF., 4.7 HFD 28PCT 25V; ELECTRO	X	X		
C8597	22-7748-28A	C8Q12	CMF., 0.0047 HFD 28PCT 180V; POLY	X	X		
C8597	22-7788-28C	C8Q8	CMF., 0.22 HFD 18PCT 180V; POLY	X	X		
C8599		POLYPROPYLENE		X			
C8599	22-7814-24D	C08	CMF., 10000 PFD 28PCT 50V; DISC	X	X		
C8599	22-7814-24D	C08	CMF., 10000 PFD 28PCT 50V; DISC	X	X		
C8599	22-7748-24A	C8Q12A	CMF., 0.1 NFD 28PCT 180V; POLY	X	X		
C8599	22-7718-85C	CE18	CMF., 2.2 HFD +50-18PCT 50V; ELECTROLYTIC	X	X		
C8599		PROVISION		X			
C8599	22-7828-27C	C8Q12	CMF., 51 HFD 18PCT 50V; DISC	X	X		
C8599	22-7828-24C	C8Q12	CMF., 38 HFD 18PCT 50V; DISC	X	X		
C8599	22-7838-18C	C8Q12	CMF., 10 PFD +0.1 0.5 HFD 50V; DISC	X	X		
C8599	22-7838-28A	C8Q12	CMF., 1 HFD 28PCT 25V; ELECTRO	X	X		
C8599	22-7828-87C	C8Q4	CMF., 0.01 HFD 35CT 50V; TUBULAR	X	X		
C8599	22-7748-94A	C8Q12	CMF., 0.0022 HFD 28PCT 180V; POLY	X	X		
C8599	22-7787-12C	CE48	CMF., 470 HFD +50-18PCT 15V; ELECTRO	X	X		
C8599	22-7787-88C	CE28	CMF., 47 HFD +50-18PCT 15V; ELECTRO	X	X		
C8599	22-7787-85C	CE18	CMF., 10 HFD +50-18PCT 15V; ELECTRO	X	X		
				X			
				X			
				X			
				X			
C8592	183-279-34A	CE13	DIOXIDE / ZENER; 28V 0.5W	X	X		
C8592	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8593	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8594	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X			
C8594		DQ33	PROVISION	X			
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
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C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		
C8595	183-142-81	DQ33	DIOXIDE / LOW VOLTAGE GENERAL / SILICON	X	X		

CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	SYMBOL NAME	DESCRIPTION	9-317 9-317-81
IC6851	183-279-06A	ZEN13	DIODE; ZENER; 3.6V 0.5W	X X
IC6426	221-213		IC; 1 AMP VOLTAGE REGULATOR	X X
IC6506	221-251		IC; CHARACTER GENERATOR	X X
IC6688	221-258-01	181C	IC; TUNING SVTCH INTERFACE	X X
IC6788	221-385		IC; MICRO-COMPUTER; TUNING SYSTEM	X X
IC6888	221-386		IC; N-CHAN NMOS, 1K	X X
L6328	28-3987-12A	LFA18	COIL, .	X X
L6778	28-3987-05A	LFA18	COIL, .	X X
L6783	28-3987-12A	LFA18	COIL, .	X X
06301	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06302	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06383	121-978-01	QMPN	TRANSISTOR; PNP, SILICON	X
06383		QMPN	PROVISION	X
06384	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06385	121-1062	QMPN	TRANSISTOR; PNP, SILICON	X X
06385		QMPN	PROVISION	X
06386	121-1842-01	QMPN	TRANSISTOR; NPN, SILICON; OAKLINGTON	X X
06387	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06388	121-895	QMPN	TRANSISTOR; NPN, SILICON	X X
06389	121-895	QMPN	TRANSISTOR; NPN, SILICON	X X
06888	121-1843	QMPN	TRANSISTOR; PNP, SILICON	X X
06882	121-1843	QMPN	TRANSISTOR; PNP, SILICON	X X
06728	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06728	121-1843	QMPN	TRANSISTOR; PNP, SILICON	X X
06768	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06791	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06778	121-978-01	QMPN	TRANSISTOR; PNP, SILICON	X X
06780	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06781	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06868	121-975	QMPN	TRANSISTOR; NPN, SILICON	X X
06451	83-18235-98	RA12	RES.; FILM; 12K OHM SPT 1/4W	X X
06452	83-18236-18	RA12	RES.; FILM; 68K OHM SPT 1/4W	X X
06454	83-7783	RA25	RES.; CARBON; 330 OHM SPT 1/2W	X X
06478			PROVISION	X
06478			PROVISION	X
06471	83-10048-38	RA25	RES.; FILM; 39 OHM SPT 3W	X
06476	83-18243-90	RA25	RES.; FILM; 5.6K OHM SPT 1/2W	X X
06477	83-7767	RA25	RES.; CARBON; 390 OHM SPT 1/2W	X X
06478	83-18235-34	RA12	RES.; FILM; 0.2K OHM SPT 1/4W	X X
06481	83-18235-86	RA12	RES.; FILM; 3.9K OHM SPT 1/4W	X X
06500	83-18235-88	RA12	RES.; FILM; 2.2K OHM SPT 1/4W	X X
06501	83-18235-86	RA12	RES.; FILM; 18K OHM SPT 1/4W	X X
06502	83-18237-72	RA12	RES.; FILM; 1K OHM SPT 1/4W	X X
06503	83-18193-56	RA12	RES.; CARBON; 220 OHM 10PCT 1/4W	X
06503		RA12	PROVISION	X
06506	83-18236-04	RA12	RES.; FILM; 22K OHM SPT 1/4W	X X
06507	83-18233-77	RA12	RES.; FILM; 1.6K OHM SPT 1/4 W	X
06507			PROVISION	X
06508	83-18233-85	RA12	RES.; FILM; 3.6K OHM SPT 1/4W	X
06508			PROVISION	X
06509	83-18235-86	RA12	RES.; FILM; 3.9K OHM SPT 1/4W	X
06509		RA12	PROVISION	X
06518	83-18181-48	RA12	RES.; CARBON; 180 OHM SPT 1/4W	X X
06511	83-18233-94	RA12	RES.; FILM; 0.2K OHM SPT 1/4W	X
06511			PROVISION	X
06512	83-18236-38	RA12	RES.; FILM; 560K OHM SPT 1/4W	X X
06513	83-18233-90	RA12	RES.; FILM; 5.6K OHM SPT 1/4W	X
06513			PROVISION	X
06514	83-18181-36	RA12	RES.; CARBON; 33 OHM SPT 1/4W	X X
06515	83-18236-13	RA12	RES.; FILM; 51K OHM SPT 1/4W	X
06516	83-18233-86	RA12	RES.; FILM; 18K OHM SPT 1/4W	X
06516			PROVISION	X

D17

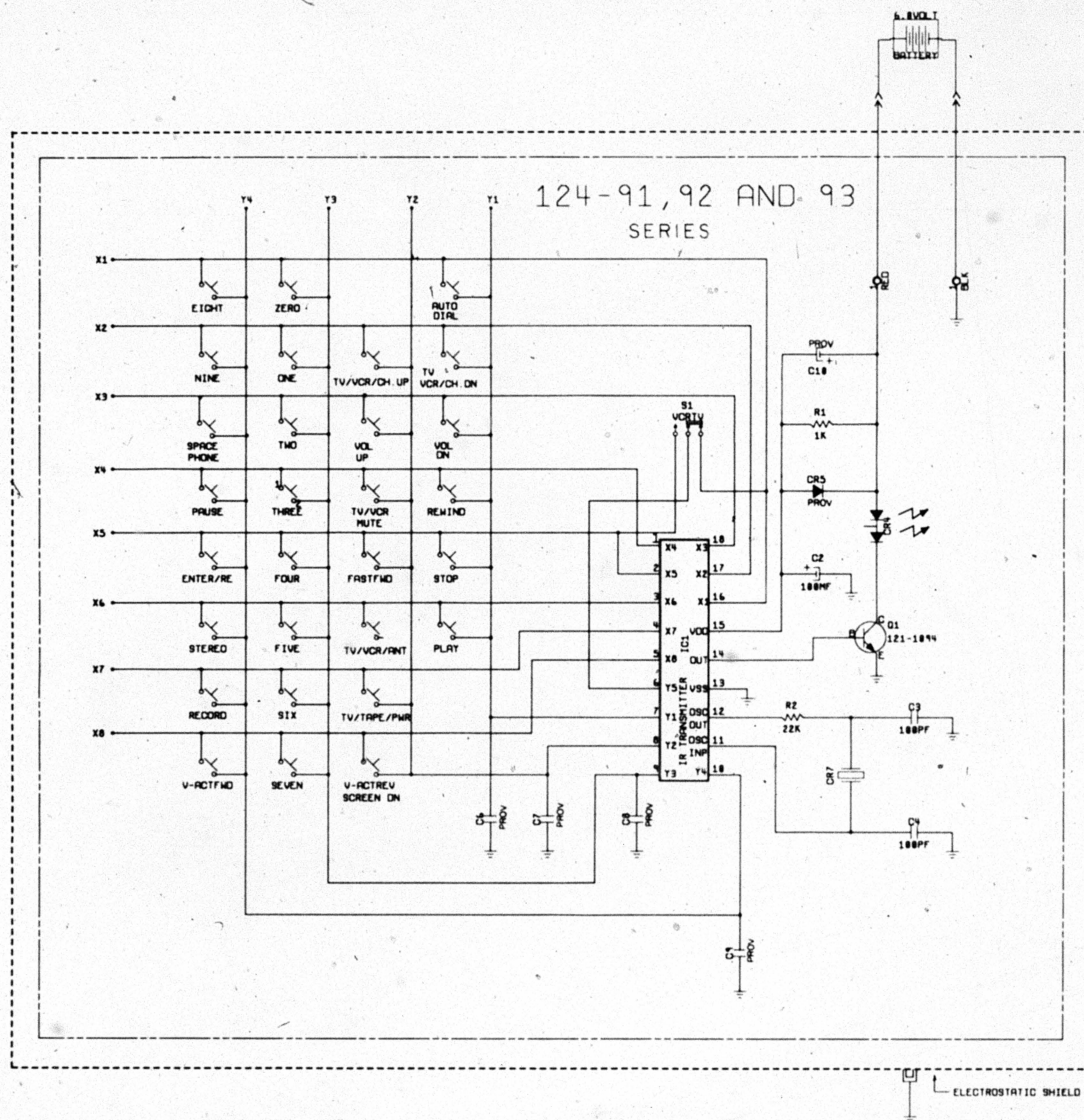
D18

CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	SYMBOL NAME	DESCRIPTION	9-217-81	9-217-82
R6768	63-10183-04	RA12	RES.; CARBON; 3.3K 10PCT 1/4W	X	X
R6761	63-10183-04	RA12	RES.; CARBON; 3.3K 10PCT 1/4W	X	X
R6762	63-10183-04	RA12	RES.; CARBON; 3.3K 10PCT 1/4W	X	X
R6763	63-10183-04	RA12	RES.; CARBON; 3.3K 10PCT 1/4W	X	X
R6764	63-10183-04	RA12	RES.; CARBON; 3.3K 10PCT 1/4W	X	X
R6765	63-10183-04	RA12	RES.; CARBON; 3.3K 10PCT 1/4W	X	X
R6766	63-10236-26	RA12	RES.; FILM; 180K OHM SPT 1/4W	X	X
R6767	63-7826	RA25	RES.; CARBON; 18K OHM SPT 1/2 W	X	X
R6768	63-7819	RA25	RES.; CARBON; 6.8K OHM SPT 1/2W	X	X
R6769	63-10235-08	RA12	RES.; FILM; 4.7K OHM SPT 1/4W	X	X
R6770	63-10235-92	RA12	RES.; FILM; 6.8K OHM SPT 1/4W	X	X
R6773	63-10236-20	RA12	RES.; FILM; 100K OHM SPT 1/4W	X	X
R6774	63-10235-96	RA12	RES.; FILM; 18K OHM SPT 1/4W	X	X
R6775	63-10236-24	RA12	RES.; FILM; 150K OHM SPT 1/4W	X	X
R6776	63-10236-28	RA12	RES.; FILM; 180K OHM SPT 1/4W	X	X
R6777	63-10236-20	RA12	RES.; FILM; 180K OHM SPT 1/4W	X	X
R6778	63-10236-20	RA12	RES.; FILM; 180K OHM SPT 1/4W	X	X
R6779	63-10236-20	RA12	RES.; FILM; 180K OHM SPT 1/4W	X	X
R6780	63-10236-20	RA12	RES.; FILM; 180K OHM SPT 1/4W	X	X
R6781	63-10235-96	RA12	RES.; FILM; 18K OHM SPT 1/4W	X	X
R6782	63-10235-72	RA12	RES.; FILM; 1K OHM SPT 1/4W	X	X
R6783	63-10236-12	RA12	RES.; FILM; 47K OHM SPT 1/4W	X	X
R6784	63-10183-56	RA12	RES.; CARBON; 220 OHM 10PCT 1/4W	X	X
R6786	63-10235-96	RA12	RES.; FILM; 18K OHM SPT 1/4W	X	X
R6787	63-10235-88	RA12	RES.; FILM; 2.2K OHM SPT 1/4W	X	X
R6788	63-10235-96	RA12	RES.; FILM; 12K OHM SPT 1/4W	X	X
R6789		RA12	PROVISION		X
R6789		RA12	PROVISION		X
R6790	63-10235-72	RA12	RES.; FILM; 1K OHM SPT 1/4W	X	X
R6791	63-10235-96	RA12	RES.; FILM; 18K OHM SPT 1/4W	X	X
R6793	63-10235-96	RA12	RES.; FILM; 18K OHM SPT 1/4W	X	X
R6794	63-10181-48	RA12	RES.; CARBON; 100 OHM SPT 1/4W	X	X
R6795	63-10181-48	RA12	RES.; CARBON; 100 OHM SPT 1/4W	X	X
R6796	63-10181-48	RA12	RES.; CARBON; 100 OHM SPT 1/4W	X	X
R6797	63-10181-48	RA12	RES.; CARBON; 100 OHM SPT 1/4W	X	X
R6852	63-10236-18	RA12	RES.; FILM; 39K OHM SPT 1/4W	X	X
R6853	63-10236	RA12	RES.; FILM; 15K OHM SPT 1/4W	X	X



CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	SYMBOL NAME	DESCRIPTION	QTY
IC3481	22-7431-06	CD7430	CMP.; 8,0047 MFD +20 PCT -20 PCT; DISC	X
IC3482	22-3748		CMP.; 1000 PFD +10 PCT -10 PCT 1000V; DISC	X
IC3483	22-3748		CMP.; 1000 PFD +10 PCT -10 PCT 1000V; DISC	X
IC3484	22-3748		CMP.; 1000 PFD +10 PCT -10 PCT 1000V; DISC	X
IC3485	22-7395		CMP.; 500 MFD + - 20PCT 200V; ELECTRO	X
IC3486	22-7431-06	CD7430	CMP.; 8,0047 MFD +20 PCT -20 PCT; DISC	X
IC3487	22-7668-09A		CMP.; 100 MFD 20PCT 25V; ELECTRO	X
IC3488	22-7668-09A		CMP.; 100 MFD 20PCT 25V; ELECTRO	X
IC3489	22-7523-01	CD752	CMP.; 0.01 MFD +20 PCT -20 PCT 2000V; DISC	X
IC3418	22-7802-07	CR4	CMP.; 0.01 MFD 20PCT 50V; TUBULAR	X
IC3411	22-7742-02	CR12	CMP.; 22 PFD 20PCT 50V; TUBULAR	X
IC3410	22-7657-09A		CMP.; 100 MFD 20PCT 6.3V; ELECTRO	X
IC3417	22-7662-01A	CE18	CMP.; 1 MFD 20PCT 50V; ELECTRO	X
IC3414	22-7802-13		CMP.; 5000 PFD 20PCT 50V; TUBULAR	X
IC3413	22-7802		CMP.; 47 MFD +50PCT -50PCT 200V; ELECTRO	X
IC3416	22-7818-04	CE85	CMP.; 47 MFD 20PCT 200V; ELECTRO	X
IC3417	22-7802-12	CE85	CMP.; 470 MFD 20PCT 50V; ELECTRO	X
IC3418	22-7808-12	CE58	CMP.; 470 MFD 20PCT 25V; ELECTRO	X
IC3419	22-7808-12	CE58	CMP.; 470 MFD 20PCT 25V; ELECTRO	X
IC3420	22-3748		CMP.; 1000 PFD +10 PCT -10 PCT 1000V; DISC	X
IC3422	22-7668-12	CE38	CMP.; 470 MFD 20PCT 25V; ELECTRO	X
IC3443	22-5854	CD375	CMP.; 1 MFD +10/-10 PCT DISC	X
IC3421	00924		CMP.; 1000 PFD +10 PCT -10 PCT 1000V; DISC	X
IC3423	22-3748		CMP.; 1000 PFD + - 10 PCT 1000V; DISC	X
IC3428	22-3748		CMP.; 1000 PFD + - 10 PCT 1000V; DISC	X
IC3481	103-345-06A		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3482	103-345-06A		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3483	103-345-06A		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3484	103-345-06A		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3485	103-254-01	DP22	DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3486	103-344	DP12	DIODE; LOW VOLTAGE GENERAL	X
IC3487	103-254-01	DP22	DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3488	103-254-01	DP22	DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3489	103-142-01	DP33	DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3418	103-339-04A		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3411	103-360-03		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3412	103-339-02A		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3414	103-254-01	DP22	DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3416	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3417	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3418	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3419	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3420	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3421	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3422	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3423	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3424	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3425	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3426	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3427	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3428	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3429	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3430	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3431	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3432	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3433	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
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IC3439	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
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IC3457	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3458	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3459	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3460	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3461	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3462	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3463	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
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IC3469	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3470	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
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IC3548	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3549	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3550	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3551	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
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IC3555	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3556	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3557	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3558	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3559	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3560	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3561	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3562	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3563	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3564	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3565	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3566	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3567	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3568	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3569	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3570	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3571	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3572	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3573	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3574	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3575	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3576	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3577	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3578	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3579	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3580	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3581	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3582	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3583	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3584	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3585	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3586	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3587	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3588	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3589	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3590	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3591	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3592	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3593	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3594	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3595	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3596	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3597	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3598	103-254-01		DIODE; LOW VOLTAGE GENERAL; SILICON	X
IC3599	103-254-01		DI	

CIRCUIT REFERENCE DESIGNATION	PART NUMBER	SYMBOL NAME	DESCRIPTION	QTY
L3401	95-3439R		COIL, LINE FILTER	X
L3402	91-2953	JUMP	WIRE, SOLID, SINGLE CONDUCTOR, 22 GA TINNED	X
L3482	149-454	FC1	COIL, FERRITE, BEAD	X
L3483	91-2953	JUMP	WIRE, SOLID, SINGLE CONDUCTOR, 22 GA TINNED	X
L3483	149-454	FC1	COIL, FERRITE, BEAD	X
L3484	28-4875-87	LHM	COIL	X
L3485	28-403-C1	LHM	COIL	X
L3486	28-4875-87	LHM	COIL	X
L3487	149-454	FC1	COIL, FERRITE, BEAD	X
L3488	149-454	FC1	COIL, FERRITE, BEAD	X
L3489	149-454	FC1	COIL, FERRITE, BEAD	X
L3410	149-454	FC1	COIL, FERRITE, BEAD	X
L3411	149-454		COIL, FERRITE, BEAD	X
Q3401	019-557-04		CLIP, TRANSISTOR MOUNTING	X
Q3401	085-8490		USS STRIP, TPAC	X
Q3481	094-1545		BUSHING, SHOULDER, NYLON	X
Q3481	121-1808-81		TRANSISTOR, NPN, SILICON	X
Q3482	121-1804R		TRANSISTOR, NPN, SILICON	X
Q3483	121-1804R		TRANSISTOR, PNP, SILICON	X
Q3484	121-1102	QPNP J	TRANSISTOR, PNP, SILICON	X
Q3485	121-1804R		TRANSISTOR, NPN, SILICON	X
R3482	63-18836-92		RES.; FILM, BULK OHM SPT 2W	X
R3482	63-10422-14		RES.; W4; 8.25 OHM 1/2W	X
R3483	63-10230-34	R012	RES.; FILM, 27 OHM SPT 1/4W	X
R3484	63-18836-20	W412	RES.; FILM, 100K OHM SPT 1/4W	X
R3485	63-20366	W412	RES.; FILM, 15K OHM SPT 1/4W	X
R3486	63-18857-08	PD	CONTROL	X
R3487	63-18836-48		RES.; FILM, 100 OHM SPT 2W	X
R3488	63-18835-96	W412	RES.; FILM, 10K OHM SPT 1/4W	X
R3489	63-18835-74	W412	RES.; FILM, 1.2K OHM SPT 1/4W	X
R3410	63-18835-96	W412	RES.; FILM, 220 OHM SPT 1/4W	X
R3411	63-18836-24	W412	RES.; FILM, 150K OHM SPT 1/4W	X
R3412	63-18835-85	W412	RES.; FILM, 3.5K OHM SPT 1/4W	X
R3413	63-19420-81		RES.; W4; 240 OHM SPT 3W	X
R3414	63-18835-96	W412	RES.; FILM, 10K OHM SPT 1/4W	X
R3415	63-18840-68		RES.; FILM, 680 OHM SPT 1/4W	X
R3416	63-18840-68		RES.; FILM, 680 OHM SPT 3W	X
R3417	63-18835-78	W412	RES.; FILM, 820 OHM SPT 1/4W	X
R3418	63-18464-31A		RES.; W4; 2 OHM SPT 15W	X
R3419	63-18468-44H		RES.; W4; 5.0 OHM 1/2CT 10W	X
R3421	63-0249-05	W425	RES.; CARBON, 32K OHM SPT 1/2W	X
R3423	63-10241-90	W425	RES.; CARBON, 32K OHM SPT 1/2W	X
R3424	63-7768		RES.; CARBON, 270 OHM SPT 1/2 W	X
R3425	63-7768		RES.; CARBON, 270 OHM SPT 1/2 W	X
R3427	63-18848-78		RES.; FILM, 820 OHM SPT 1/2W	X
R3428	63-18844-20		RES.; FILM, 100K OHM SPT 1/2W	X
R3429	63-10236-03		RES.; FILM, 20K OHM SPT 1/4W	X
R3430	63-10235-98		RES.; FILM, 12K OHM SPT 1/4W	X
R3431	95-3649	T3649	TRANSFORMER, SWITCHMODE	X
R3631	63-10657-03		RES.; CARBON, 1.2M OHM 20 RT 1/4W	X
98-434			CONNECTOR AND; CABLE ASSEMBLY	X
64-519-81			EYELET, MOLDED FLANGE	X
64-1872			GRIPLET; 8-7/8 DIA X .085 LG; BRASS-SOLDER COATED	X
98-389			FEMALE TERMINAL	X
98-799		STAKE	SCREW; PIN, 8-045 INCH SQUARE	X
98-1853			COIL FORM, BOBBIN, SCRN REDUCER	X
91-2953		JUMP	WIRE, SOLID, SINGLE CONDUCTOR, 22 GA TINNED	X
91-2922-868			WIRE, SOLID, SINGLE CONDUCTOR, 22 GA, RED	X
126-2210			HEAT SINK, TRANSISTOR	X
204-1228			PRINTED CIRCUIT, POWER SUPPLY	X



TV FUNCTION	VCR FUNCTION	KEYBOARD CLOSURES
AUTO DIAL	NOT ASSIGNED	X1-Y1
CH. DN	VCR CH. DN	X2-Y1
VOL. DN	NOT ASSIGNED	X3-Y1
AUTO OFF	REWIND	X4-Y1
NOT ASSIGNED	STOP	X5-Y1
NOT ASSIGNED	PLAY	X6-Y1
NOT ASSIGNED	NOT ASSIGNED	X7-Y1
NOT ASSIGNED	NOT ASSIGNED	X8-Y1
NOT ASSIGNED	NOT ASSIGNED	X1-Y2
CH. UP	VCR CH. UP	X2-Y2
VOL. UP	NOT ASSIGNED	X3-Y2
MUTE	TV/VCR	X4-Y2
AUTO ON	FAST FWD	X5-Y2
PNT	VCR PNT	X6-Y2
POWER	VCR PWR	X7-Y2
SCREEN ON	VID ACT REV	X8-Y2
8	8	X1-Y3
1	1	X2-Y3
2	2	X3-Y3
3	3	X4-Y3
4	4	X5-Y3
5	5	X6-Y3
6	6	X7-Y3
7	7	X8-Y3
8	8	X1-Y4
1	1	X2-Y4
SPACE PHONE	NOT ASSIGNED	X3-Y4
NOT ASSIGNED	PAUSE	X4-Y4
ENTER/RECALL	ENTER	X5-Y4
STEREO	STEREO	X6-Y4
NOT ASSIGNED	RECORD	X7-Y4
NOT ASSIGNED	VID ACT FWD	X8-Y4

NOTES:

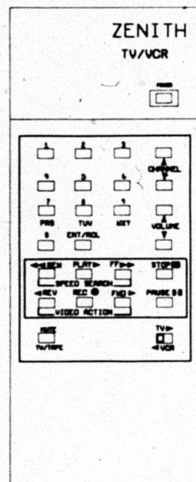
1. RESISTORS ARE 1/4 WATT, 5 PERCENT TOLERANCE UNLESS OTHERWISE SPECIFIED.
2. CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.

NOTES: (VALUE TAGS WITH SPECIAL MEANINGS)

- A. P/L = SEE PARTS LIST FOR APPLICABLE USAGE.
- B. JUMPER = JUMPER WIRE USED INSTEAD OF NORMAL PART.
- C. PROV = PROVISION FOR A PHYSICAL PART IN THE LAYOUT ONLY.

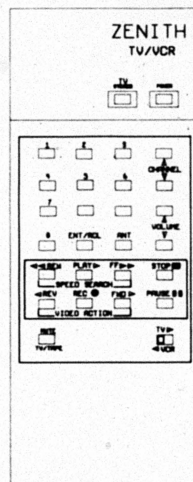
SCHEMATIC, 124-93 TRANSMITTER

SC2600



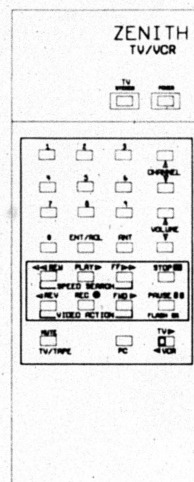
124-91
8
124-91-01

SC6000



124-92
8
124-92-01

SC6500



124-93
8
124-93-01

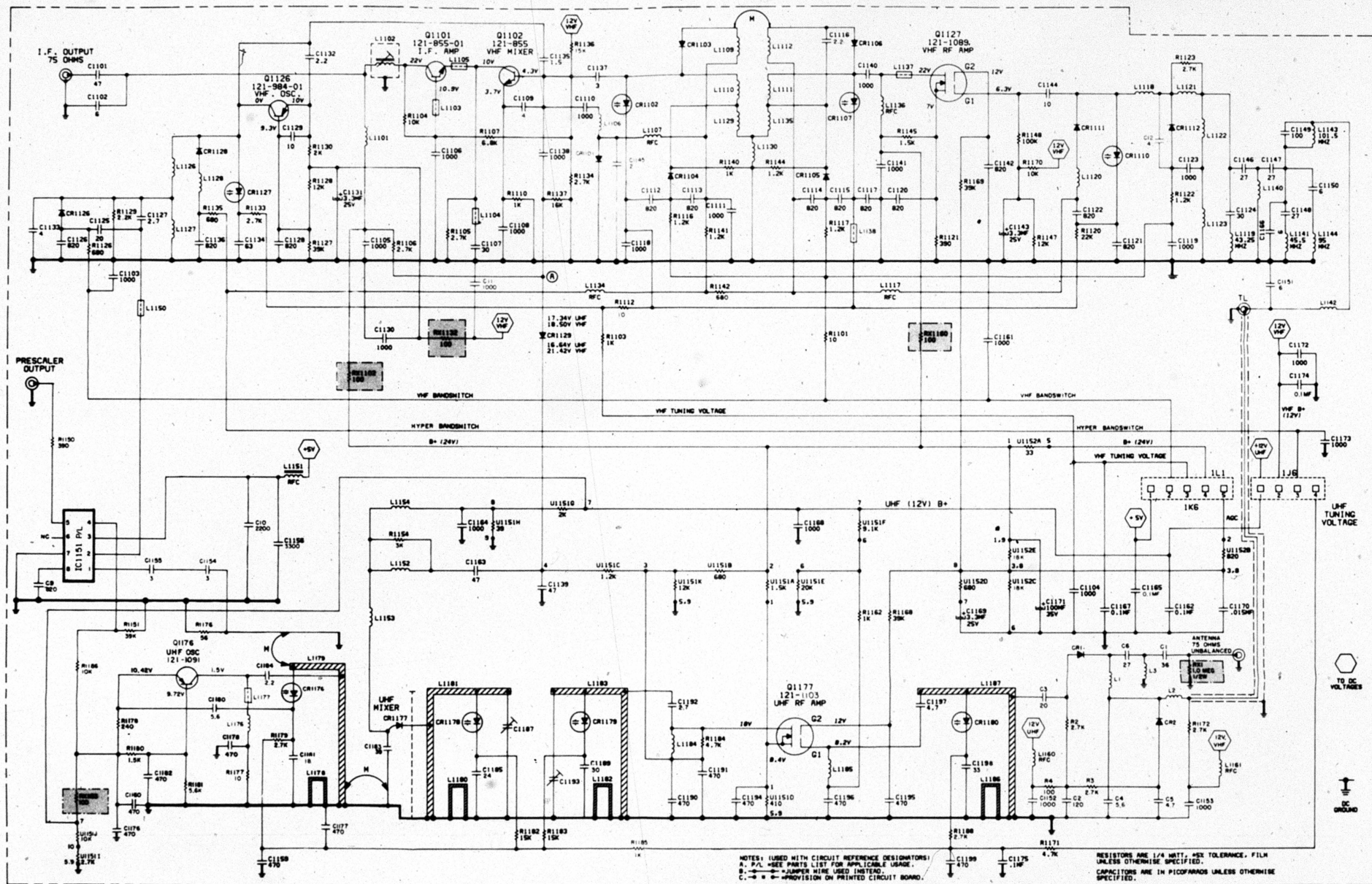
NOTES:

1. RESISTORS ARE 1/4 WATT, 5 PERCENT TOLERANCE UNLESS OTHERWISE SPECIFIED.
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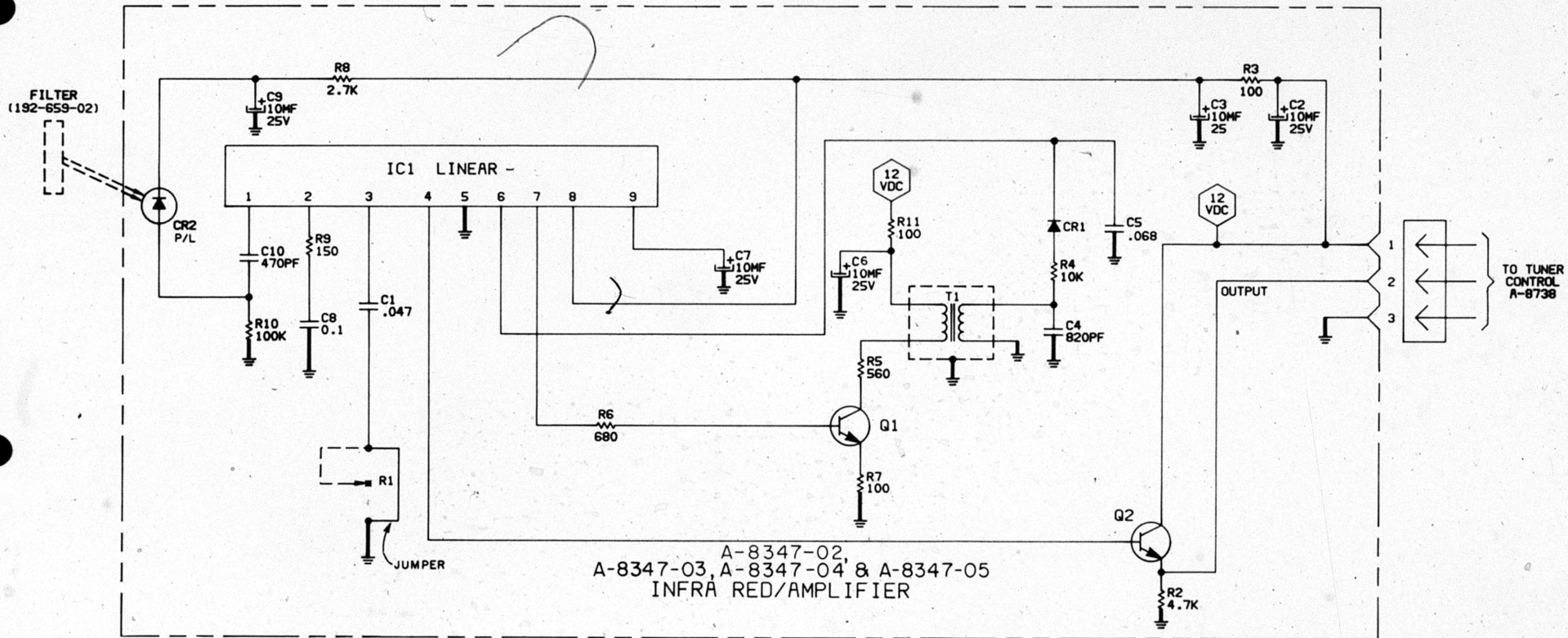
NOTES: (VALUE TAGS WITH SPECIAL MEANINGS)

- A. P/L = SEE PARTS LIST FOR APPLICABLE USAGE.
- B. JUMPER = JUMPER WIRE USED INSTEAD OF NORMAL PART
- C. PROV = PROVISION FOR A PHYSICAL PART IN THE LAYOUT ONLY.

CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	SCHEMATIC SYMBOL DESIGNATOR	DESCRIPTION	124-91	124-91	124-92	124-92	124-93	124-93
R1	63-10183-72	RA12	RESISTOR, CARBON, 1K OHM, ±10-10PER, 1/4W	X	X	X	X	X	X
R2	63-10236-04	RA12	RESISTOR, FILM 22K OHM, ±5-5PER, 1/4W	X	X	X	X	X	X
C2	22-7834	CE20	CAPACITOR, ELECTROLYTIC, 100MF, 6.3V, ±50-10	X	X	X	X	X	X
C3	22-7750-36	CAD12	CAPACITOR, AXIAL 100PF ±5-5PER, 50V	X	X	X	X	X	X
C4	22-7750-36	CAD12	CAPACITOR, AXIAL 100PF ±5-5PER, 50V	X	X	X	X	X	X
C6		CAD12	PROVISION	X	X	X	X	X	X
C7		CAD12	PROVISION	X	X	X	X	X	X
C8		CAD12	PROVISION	X	X	X	X	X	X
C9		CAD12	PROVISION	X	X	X	X	X	X
C10		CE20	PROVISION	X	X	X	X	X	X
CR4	103-352	LED352	DIODE, IR EMITTING	X	X	X	X	X	X
CR5		DR33	PROVISION	X	X	X	X	X	X
CR7	224-30	CER1	RESONATOR, CERAMIC, 640 KHZ	X	X	X	X	X	X
Q1	121-1044	ONPN	TRANSISTOR, NPN	X	X	X	X	X	X
S1	85-1642-01		SLIDE SWITCH	X	X	X	X	X	X
IC1	221-242-02	101C	INTEGRATED CIRCUIT, TRANSMITTER, C-MOS	X	X	X	X	X	X
	5-133	BATTERY	BATTERY, 6 VOLT	X		X	X		
	F-10700		BATTERY CONTACT ASSEMBLY, POSITIVE	X	X	X	X	X	X
	F-10699		BATTERY CONTACT ASSEMBLY, NEGATIVE	X	X	X	X	X	X
	204-1100		PRINTED CIRCUIT BOARD	X	X	X	X	X	X



B CRITICAL SAFETY COMPONENTS:
THE LETTER "M" IN THE ELECTRICAL SCHEMATIC AND PRINTS ADOPTED FOR THE PROJECT WAS NOT CORRECTLY IDENTIFIED AS BEING THE SAME AS THE ONE USED IN THE OTHER DOCUMENTS. THIS ERROR WAS DISCOVERED BY THE TEAM LEAD AND CORRECTED.



NOTES: (USED WITH CIRCUIT REFERENCE DESIGNATORS)
 A. P/L=SEE PARTS LIST FOR APPLICABLE USAGE.
 B. ——— JUMPER WIRE USED INSTEAD.
 C. —●—●— PROVISION ON PRINTED CIRCUIT BOARD.

TO DC
VOLTAGES

DC
VOLTAGE
SOURCE

CHASSIS
GROUND

NOTES:

1. RESISTORS ARE 1/4 WATT, FILM, *5% TOLERANCE UNLESS OTHERWISE SPECIFIED.
2. CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
3. TOP AND BOTTOM SHIELD NOT SHOWN.

CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	DO NOT SPECIFY A-8347-01	DO NOT SPECIFY A-8347-02	DO NOT SPECIFY A-8347-03	DO NOT SPECIFY A-8347-04	DO NOT SPECIFY A-8347-05	CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	DO NOT SPECIFY A-8347-01	DO NOT SPECIFY A-8347-02	DO NOT SPECIFY A-8347-03	DO NOT SPECIFY A-8347-04	DO NOT SPECIFY A-8347-05
C1	22-7740-20	CAPACITOR, POLYESTER, .047 MF, ±20%, 100V		X	X	X	X	R7	63-9921-48	RESISTOR, FILM, 100 OHM, ±5%, 1/4W					
C2	22-7708-05	CAPACITOR, ELECTROLYTIC, 10 MF, +50-10%, 25V		X	X	X	X	R8	63-9921-82	RESISTOR, FILM, 2.7K OHM, ±5%, 1/4W		X	X	X	X
C3	22-7708-05	CAPACITOR, ELECTROLYTIC, 10 MF, +50-10%, 25V		X	X	X	X	R9	63-9921-52	RESISTOR, FILM, 150 OHM, ±5%, 1/4W		X	X	X	X
C4	22-7759-04	CAPACITOR, CER.CHIP, 820 PF, ±5%, 50V		X	X	X	X	R10	63-9922-20	RESISTOR, FILM, 100K OHM, ±5%, 1/4W		X	X	X	X
C5	22-7739-22	CAPACITOR, POLYESTER, .068 MF, ±10%, 100V		X	X	X	X	R11	63-9921-48	RESISTOR, FILM, 100 OHM, ±5%, 1/4W		X	X	X	X
C6	22-7708-05	CAPACITOR, ELECTROLYTIC, 10 MF, +50-10%, 25V		X	X	X	X								
C7	22-7708-05	CAPACITOR, ELECTROLYTIC, 10 MF, +50-10%, 25V		X	X	X	X	T1	95-3474	TRANSFORMER (TUNED 40 KHz)		X	X	X	X
C8	22-7563-24	CAPACITOR, POLYESTER, 0.1 MF, ±10%, 100V		X	X	X	X	QTY USED							
C9	22-7708-05	CAPACITOR, ELECTROLYTIC, 10 MF, +50-10%, 25V		X	X	X	X	I	12-7825	BRACKET		X			
C10	22-7742-06	CAPACITOR, AXIAL, 470 PF, ±10%, 50V		X	X	X	X	I	12-7827	BRACKET			X		
								I	12-7825-01	BRACKET				X	
								I	43-1695-01	HOUSING, OUTER		X	X	X	
								I	43-1744-01	HOUSING, OUTER			X		
								I	101-6602	LABEL (PC BOARD REMOVAL INSTRUCTIONS)		X	X	X	X
								2	114-803	SCREWS		X	X	X	X
CR1	103-142-01	DIODE, LOW VOLTAGE, GENERAL, SILICON		X	X	X	X	I	126-1982-01	SHIELD, BOTTOM DIVIDER (FOIL SIDE)		X	X	X	X
CR2	162-12	SILICON PIN PHOTODIODE, IR DETECTOR		X		X	X	I	126-1983-01	SHIELD, TOP DIVIDER (COMPONENT SIDE)		X	X	X	X
CR2	A-9715	PHOTODIODE, FORMED LEADS		X				I	192-659-02	IR FILTER		X		X	X
IC1	221-187	INTEGRATED CIRCUIT, LINEAR		X	X	X	X								
								I	194-546-01	STRIP, INSULATING, FLAT STOCK		X	X	X	X
Q1	121-499	TRANSISTOR, NPN, SILICON		X	X	X	X	I	204-759-01	PRINTED CIRCUIT BOARD		X	X	X	X
Q2	121-975	TRANSISTOR, NPN, SILICON		X	X	X	X		28-284	PERFORMANCE SPECIFICATION		X		X	X
R1	191-1005-03	WIRE, PRECUT, #22 GAUGE		X	X	X	X	I	138-1739	SCREEN		X		X	X
R2	63-9921-88	RESISTOR, FILM, 4.7K OHM, ±5%, 1/4W		X	X	X	X	I	138-1739-01	SCREEN			X		
R3	63-10183-48	RESISTOR, CARBON 100 OHM, ±10%, 1/4W		X	X	X	X								
R4	63-9921-96	RESISTOR, FILM, 10K OHM, ±5%, 1/4W		X	X	X	X								
R5	63-9921-66	RESISTOR, FILM, 560 OHM, ±5%, 1/4W		X	X	X	X								
R6	63-9921-68	RESISTOR, FILM, 680 OHM, ±5%, 1/4W		X	X	X	X								

IMPORTANT SAFETY NOTICE

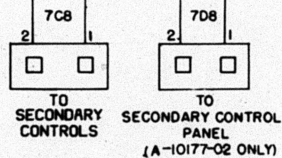
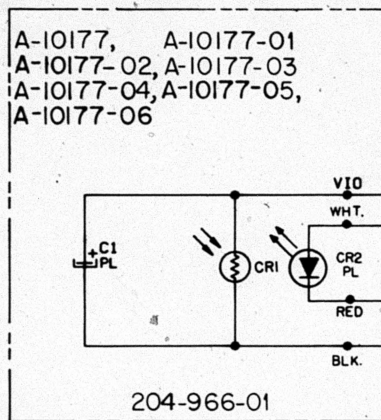
WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTERED WITHOUT PERMISSION FROM THE ZENITH RADIO CORPORATION. ALL COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT, AND THEIR PHYSICAL LOCATION, WIRING AND LEAD DRESS MUST CONFORM TO ORIGINAL LAYOUT UPON COMPLETION OF REPAIRS. IN SOME INSTANCES REDUNDANT CIRCUITRY IS INCORPORATED FOR ADDITION CIRCUIT PROTECTION AND X-RADIATION SAFETY. SPECIAL CIRCUITS ARE ALSO USED TO PREVENT SHOCK AND FIRE HAZARD. THESE CRITICAL AREAS ARE SHADED ON THE SCHEMATIC FOR EASY IDENTIFICATION. THE LETTER "X" INCLUDED IN THE CIRCUIT REFERENCE DESIGNATOR, DESIGNATES SPECIAL COMPONENTS IN THE AREAS WHICH ARE REQUIRED TO MAINTAIN SAFE PERFORMANCE. NO DEVIATIONS ARE ALLOWED WITHOUT PRIOR APPROVAL BY THE SAFETY ENGINEERING DEPARTMENT.

CAUTION

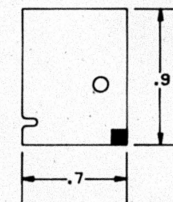
THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES IN-TO THE SETS IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.

CRITICAL SAFETY COMPONENTS:

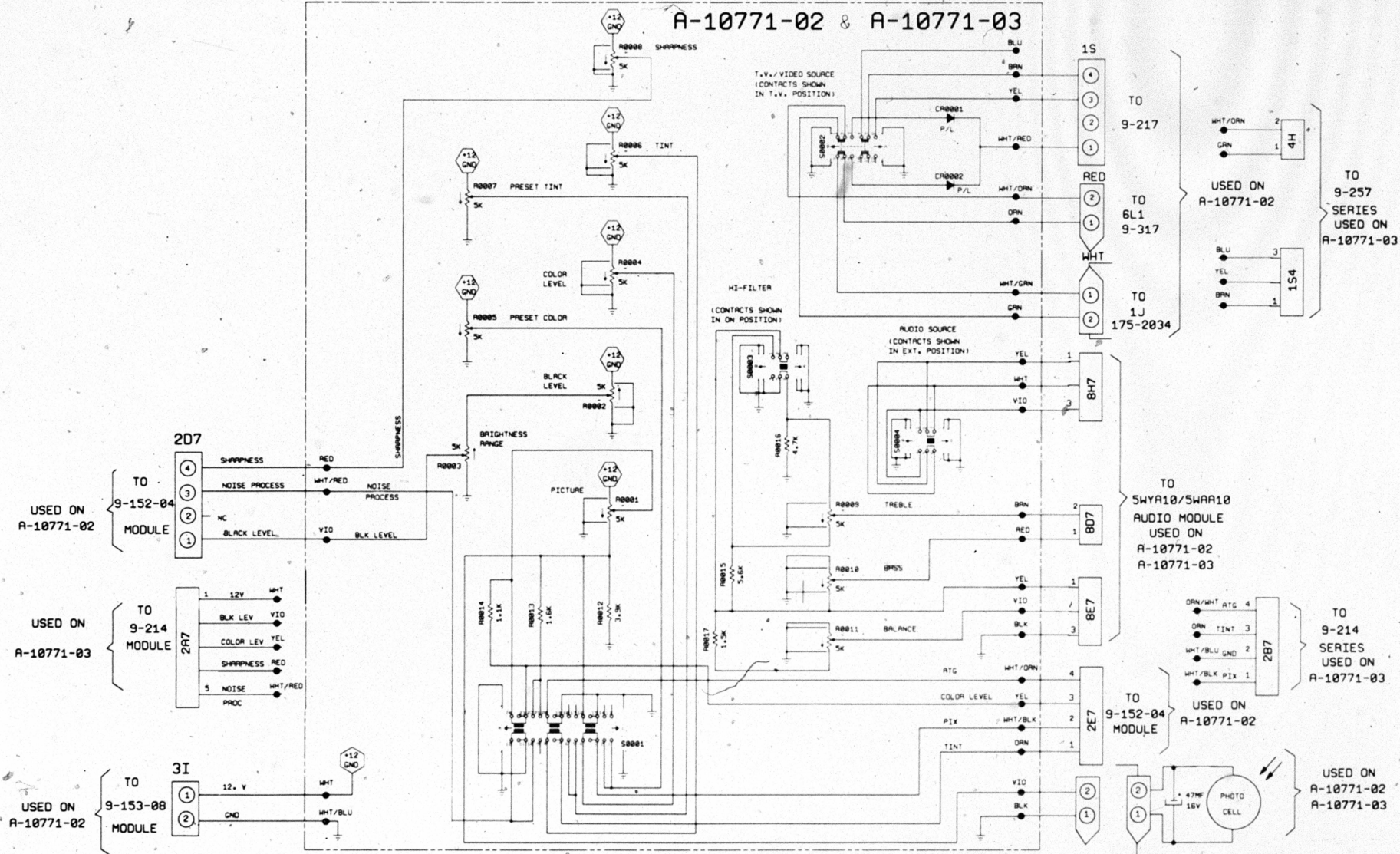
THE LETTER "X" IN THE ELECTRICAL SCHEMATIC AND PARTS LIST, DESIGNATES SPECIAL CRITICAL SAFETY COMPONENTS. THESE SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ZENITH PARTS LIST AND SCHEMATIC.



	A-10177-06	A-10177-05	A-10177-04	A-10177-03	A-10177-02	A-10177-01	A-10177		COMPONENT REFERENCE	PART NUMBER	DESCRIPTION
	x	x	x	x	x	x	x		CR1	162-10	LIGHT SENSOR
	x	x	x	x	x				C1	22-7859-08	CAP. ELECTROLYTIC 47MF +50 -10%, 16V
						x	x		C1	22-7707-08C	CAP. ELECTROLYTIC 47MF +50 -10%, 16V
					x				CR2	A-8865-03	DIODE ASSY - RED
			x				x			A-9055	CABLE & HOUSING ASSY
		x							7C8	50-209-42	CABLE & HOUSING ASSY
	x				x				7C8	50-209-29	CABLE & HOUSING ASSY
				x					7C8	50-209-67	CABLE & HOUSING ASSY
					x				7D8	50-209-30	CABLE & HOUSING ASSY
						x				50-280	CABLE & HOUSING ASSY
	x	x	x	x	x	x	x			199-642	SLEEVING, LIGHT SENSOR
	x	x	x	x	x	x	x			204-966-01	PC BOARD



A-10771-02 & A-10771-03



NOTES:-

1. RESISTORS ARE 1/4 WATT, 5 PERCENT TOLERANCE UNLESS OTHERWISE SPECIFIED.
2. CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.

NOTES: (VALUE TAGS WITH SPECIAL MEANINGS)

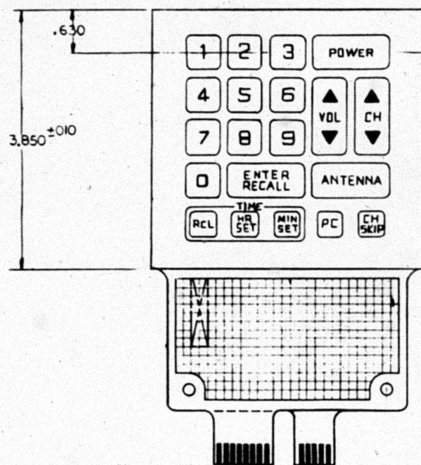
- A. P/L = SEE PARTS LIST FOR APPLICABLE USAGE.
- B. JUMPER = JUMPER WIRE USED INSTEAD OF NORMAL PART
- C. PROV = PROVISION FOR A PHYSICAL PART
IN THE LAYOUT ONLY.

ASSEMBLY
A-10771-02
A-10771-03

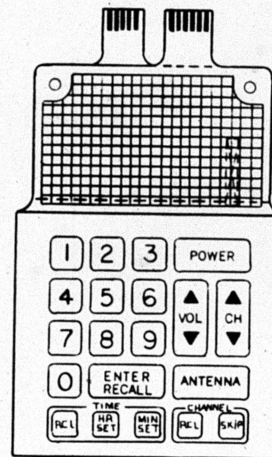
WHERE USED
PV4341P
SA2573NK

CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	SYMBOL NAME	DESCRIPTION	
.C00001	183-254-01	D022	DIODE; LOW VOLTAGE GENERAL; SILICON	X
.C00002	183-254-01	D022	DIODE; LOW VOLTAGE GENERAL; SILICON	X
.				
.				
.				
.R0001	63-10759	POT168	CONTROL, .5K OHM (PICTURE)	X X
.R0002	63-10754	POT168	CONTROL, .5K OHM (BLK LEVEL)	X X
.R0003	63-10057-11	POT	CONTROL, .5K OHM (BRIGHT RANGE)	X X
.R0004	63-10751	POT168	CONTROL, .5K OHM (COLOR LEVEL)	X X
.R0005	63-10057-11	POT	CONTROL, .5K OHM (PRESET COLOR)	X X
.R0006	63-10751	POT168	CONTROL, .5K OHM (TINT)	X X
.R0007	63-10057-11	POT	CONTROL, .5K OHM (PRESET TINT)	X X
.R0008	63-10750-02	CONTROL,	.5K OHM (SHARPNESS)	X X
.R0009	63-10751-10	POT168	CONTROL, .5K OHM (TREBLE)	X X
.R0010	63-10751-10	POT168	CONTROL, .5K OHM (BASS)	X X
.R0011	63-10751-09	POT168	CONTROL, .5K OHM (BALANCE)	X X
.R0012	63-10235-06	RA12	RES.; FILM; 3.9K OHM SPT 1/4W	X X
.R0013	63-10235-77	RA12	RES.; FILM; 1.5K OHM SPT 1/4W	X X
.R0014	63-10235-73	RA12	RES.; FILM; 1.1K OHM SPT 1/4W	X X
.R0015	63-10235-90	RA12	RES.; FILM; 5.6K OHM SPT 1/4W	X X
.R0016	63-10235-88	RA12	RES.; FILM; 4.7K OHM SPT 1/4W	X X
.R0017	63-10235-76	RA12	RES.; FILM; 1.5K OHM SPT 1/4W	X X
.				
.				
.				
S0001	85-1594		SWITCH; LEVER ACTION; 3 POSITION	X X
S0002	85-1505-04	S210	SWITCH; LEVER ACTION	X X
S0003	85-1505-03	S26	SWITCH; LEVER ACTION	X X
S0004	85-1505-03	S26	SWITCH; LEVER ACTION	X X
.				
.				
A-9040			CABLE ASSEMBLY; WITH HOUSING	X
.A4H	A-9912-15		CABLE ASSEMBLY; WITH HOUSING 4H	X
.154	A-9913-73		CABLE ASSEMBLY; WITH HOUSING 154	X
.				
.				
.287	A-9915-31		CABLE ASSEMBLY; WITH HOUSING	X
.				
.				
.				
.				
.				
B07	50-209-60		CONNECTOR/CABLE; ASSY., 0.156P, 2	X
.			CONTACT, 1UP; B07	
B07	50-209-72		CONNECTOR/CABLE; ASSY., 0.156P, 2	X
.			CONTACT 1UP; B07	
.31	50-209-73		CONNECTOR/CABLE; ASSY., 0.156P, 2	X
.			CONTACT 1UP; 31	
B07	50-212-36		CONNECTOR/CABLE; ASSY., 0.156P, 3	X
.			CONTACT, 1UP; B07	
B07	50-212-37		CONNECTOR/CABLE; ASSY., 0.156P, 3	X
.			CONTACT, 1UP; B07	
B07	50-212-43		CONNECTOR/CABLE; ASSY., 0.156P, 3	X
.			CONTACT, 1UP; B07	
B07	50-212-45		CONNECTOR/CABLE; ASSY., 0.156P, 3	X
.			CONTACT, 1UP; B07	
.287	50-214-22		CONNECTOR/CABLE; ASSY., 0.156P, 4	X
.			CONTACT, 1UP; 287	
.207	50-214-24		CONNECTOR/CABLE; ASSY., 0.156P, 4	X
.			CONTACT, 1UP; 207	
.15	50-214-25		CONNECTOR/CABLE; ASSY., 0.156P, 4	X
.			CONTACT, 1UP; 15	
.2E7	50-214-27		CONNECTOR/CABLE; ASSY., 0.156P, 4	X
.			CONTACT, 1UP; 2E7	
.				
A	B	C	D	E F G H I J K L M N O P Q R S T U V W X Y Z

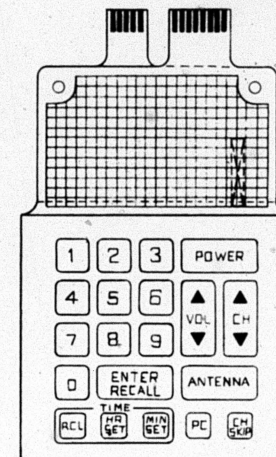
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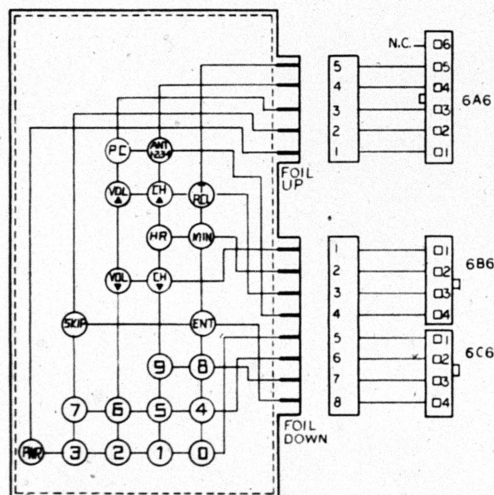
A-11351-05 & -08
 SAME AS A-11351-03
 EXCEPT AS SHOWN.



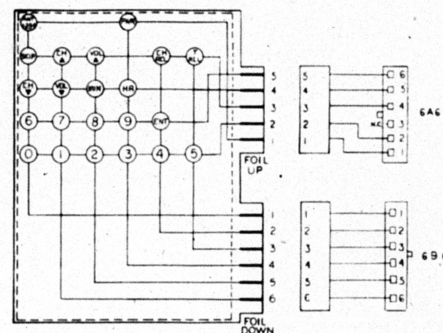
A-11351-04 & -07
 SAME AS A-11351-02
 EXCEPT AS SHOWN.



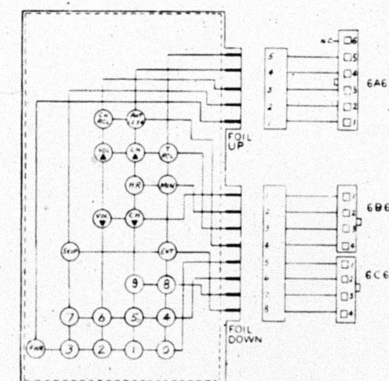
A-11351-06 & -09
 SAME AS A-11351-03
 EXCEPT AS SHOWN.



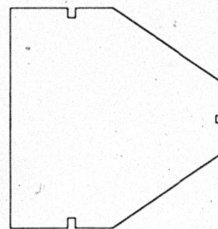
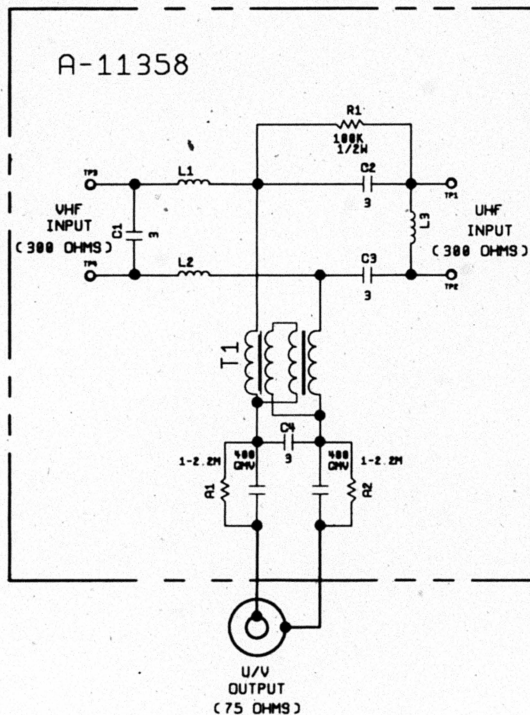
SCHEMATIC FOR -05, -06, -08 & -09



SCHEMATIC FOR -02 AND -04 & -07



SCHEMATIC FOR -03



CARD OUTLINE (2:1)

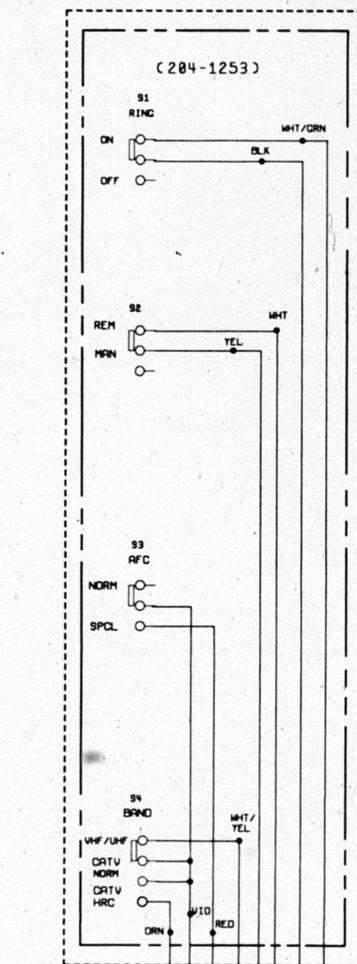
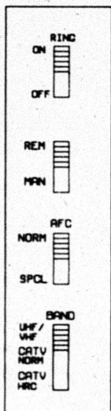
NOTES:

1. RESISTORS ARE 1/4 WATT, 5 PERCENT TOLERANCE UNLESS OTHERWISE SPECIFIED.
2. CAPACITORS ARE IN PICOFARADS UNLESS OTHERWISE SPECIFIED.

NOTES:

- A. P/L = SEE PARTS LIST FOR APPLICABLE USAGE.
- B. JUMPER = JUMPER WIRE USED INSTEAD OF NORMAL PART
- C. PROV = PROVISION FOR A PHYSICAL PART IN THE LAYOUT ONLY.

CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	SYMBOL NAME	DESCRIPTION	A-11358	
A1	105-146		CAPRISTOR	X	
A2	105-146		CAPRISTOR	X	
C1	22-7631-02C	CD1	CAPACITOR, DISC, 3PF, 50V	X	
C2	22-6225-50B		CAPACITOR, 3 PF, 500V	X	
C3	22-6225-50B		CAPACITOR, 3 PF, 500V	X	
C4	22-7631-02C	CD1	CAPACITOR, DISC, 3 PF, 50V	X	
L1	20-3734		COIL, RFC	X	
L2	20-3734		COIL, RFC	X	
L3	20-3841		COIL, RFC	X	
R1	63-10244-20	RA25	RESISTOR, 100K, 1/2W	X	
T1	9-02103	LBAL1	BALUN XFR	X	
	204-1105		P C BOARD	X	



NOTES: (VALUE TAGS WITH SPECIAL MEANINGS)
 A P/L = SEE PARTS LIST FOR APPLICABLE USAGE
 B JUMPER = JUMPER WIRE USED INSTEAD OF NORMAL PART
 C PROV = PROVISION FOR A PHYSICAL PART IN THE LAYOUT ONLY

NOTES:
 1 RESISTORS ARE 1/4 WATT, 5 PERCENT TOLERANCE UNLESS OTHERWISE SPECIFIED
 2 CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED

A-12517-82	A-12517-81	A-12517	CIRCUIT REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	X		1C6	58-281-82	CABLE AND HOUSING ASSY (2/ 156)
		X	6C4	58-281-52	
X			1C6	58-281-61	
X	X		6C6	58-214-83	CABLE AND HOUSING ASSY (4/ 156)
		X	6C6	58-214-18	
X	X		1V	A-18916A	CABLE AND HOUSING ASSY (2/ 156)
X				F-18936	
X				F-18937	
X	X	X		204-1253	PRINTED CIRCUIT BOARD

F9

SCHEMATIC AND LEGEND, A-12517 SWITCH ASSEMBLY

F10

CATV CHANNELS

*** ZENITH VHF AND CATV MID BAND FREQUENCY CHART ***

CHANNEL NUMBER	BAND	VIDEO CARRIER	AUDIO CARRIER	OSC. FREQ.	DIVIDE BY 64	CHANNEL INDICATOR
*** LOW BAND VHF ***						
2	54 - 60	55.25	59.75	101	1.57813	2
3	60 - 66	61.25	65.75	107	1.67188	3
4	66 - 72	67.25	71.75	113	1.76563	4
A-8(4+)	70.75 - 76.75	72.00	76.50	117.75	1.83984	00
5	76 - 82	77.25	81.75	123	1.92188	5
6	82 - 88	83.25	87.75	129	2.01563	6
*** MID BAND CATV ***						
A-2	108 - 114	109.25	113.75	155	2.42188	0
A-1	114 - 120	115.25	119.75	161	2.51563	1
A	120 - 126	121.25	125.75	167	2.60938	14
B	126 - 132	127.25	131.75	173	2.70313	15
C	132 - 138	133.25	137.75	179	2.79688	16
D	138 - 144	139.25	143.75	185	2.89063	17
E	144 - 150	145.25	149.75	191	2.98438	18
F	150 - 156	151.25	155.75	197	3.07813	19
G	156 - 162	157.25	161.75	203	3.17188	20
H	162 - 168	163.25	167.75	209	3.26563	21
I	168 - 174	169.25	173.75	215	3.35938	22
*** HIGH BAND VHF ***						
7	174 - 180	175.25	179.75	221	3.45313	7
8	180 - 186	181.25	185.75	227	3.54688	8
9	186 - 192	187.25	191.75	233	3.64063	9
10	192 - 198	193.25	197.75	239	3.73438	10
11	198 - 204	199.25	203.75	245	3.82831	11
12	204 - 210	205.25	209.75	251	3.92188	12
13	210 - 216	211.25	215.75	257	4.01563	13

• • • ZENITH SUPERBAND AND HYPERBAND CATV FREQUENCY CHART • • •

CHANNEL NUMBER	BAND	VIDEO CARRIER	AUDIO CARRIER	OSC. FREQ.	DIVIDE BY 64	CHANNEL INDICATOR
• • • SUPERBAND CATV • • •						
J	216 - 222	217.25	221.75	263	4.10938	23
K	222 - 228	223.25	227.75	269	4.20313	24
L	228 - 234	229.25	233.75	275	4.29688	25
M	234 - 240	235.25	239.75	281	4.39063	26
N	240 - 246	241.25	245.75	287	4.48438	27
O	246 - 252	247.25	251.75	293	4.57813	28
P	252 - 258	253.25	257.75	299	4.67188	29
Q	258 - 264	259.25	263.75	305	4.76563	30
R	264 - 270	265.25	269.75	311	4.85938	31
S	270 - 276	271.25	275.75	317	4.95313	32
T	276 - 282	277.25	281.75	323	5.04688	33
U	282 - 288	283.25	287.75	329	5.14063	34
V	288 - 294	289.25	293.75	335	5.23438	35
W	294 - 300	295.25	298.83	341	5.32813	36
• • • HYPERBAND CATV • • •						
AA	300 - 306	301.25	305.75	347	5.42188	37
BB	306 - 312	307.25	311.75	353	5.51563	38
CC	312 - 318	313.25	317.75	359	5.60938	39
DD	318 - 324	319.25	323.75	365	5.70313	40
EE	324 - 330	325.25	329.75	371	5.79688	41
FF	330 - 336	331.25	335.75	377	5.89063	42
GG	336 - 342	337.25	341.75	383	5.98438	43
HH	342 - 348	343.25	347.75	389	6.07813	44
II	348 - 354	349.25	353.75	395	6.17188	45
JJ	354 - 360	355.25	359.75	401	6.26563	46
KK	360 - 366	361.25	365.75	407	6.35938	47
LL	366 - 372	367.25	371.75	413	6.45313	48
MM	372 - 378	373.25	377.75	419	6.54688	49
NN	378 - 384	379.25	383.75	425	6.64063	50
OO	384 - 390	385.25	389.75	431	6.73438	51
PP	390 - 396	391.25	395.75	437	6.82813	52
QQ	396 - 402	397.25	401.75	443	6.92188	53
RR	402 - 408	403.25	407.75	449	7.01563	54
SS	408 - 414	409.25	413.75	455	7.10938	55
TT	414 - 420	415.25	419.75	461	7.20313	56
UU	420 - 426	421.25	425.75	467	7.29688	57
VV	426 - 432	427.25	431.75	473	7.39063	58
WW	432 - 438	433.25	437.75	479	7.48438	59
XX	438 - 444	439.25	443.75	485	7.57813	60
YY	444 - 450	445.25	449.75	491	7.67188	61
ZZ	450 - 456	451.25	455.75	497	7.76563	62
—	456 - 462	457.25	461.75	503	7.85938	63
—	462 - 468	463.25	467.75	509	7.95313	64

• • • ZENITH ULTRA CATV BAND FREQUENCY CHART • • •

CHANNEL INDICATOR	BAND	VIDEO CARRIER	SOUND CARRIER	OSC. FREQ.	DIVIDE BY 64
65	468 - 474	469.25	473.75	515	8.04688
66	474 - 480	475.25	479.75	521	8.14063
67	480 - 486	481.25	485.75	527	8.23438
68	486 - 492	487.25	491.75	533	8.32813
69	492 - 498	493.25	497.75	539	8.42188
70	498 - 504	499.25	503.75	545	8.51563
71	504 - 510	505.25	509.75	551	8.60938
72	510 - 516	511.25	515.75	557	8.70313
73	516 - 522	517.25	521.75	563	8.79688
74	522 - 528	523.25	527.75	569	8.89063
75	528 - 534	529.25	533.75	575	9.98438
76	534 - 540	535.25	539.75	581	9.07813
77	540 - 546	541.25	545.75	587	9.17188
78	546 - 552	547.25	551.75	593	9.26563
79	552 - 558	553.25	557.75	599	9.35938
80	558 - 564	559.25	563.75	605	9.45313
81	564 - 570	565.25	569.75	611	9.54688
82	570 - 576	571.25	575.75	617	9.64063
83	576 - 582	577.25	581.75	623	9.73438
84	582 - 588	583.25	587.75	629	9.82813
85	588 - 594	589.25	593.75	635	9.92188
86	594 - 600	595.25	599.75	641	10.0156
87	600 - 606	601.25	605.75	647	10.1094
88	606 - 612	607.25	611.75	653	10.2031
89	612 - 618	613.25	617.75	659	10.2969
90	618 - 624	619.25	623.75	665	10.3906
91	624 - 630	625.25	629.75	671	10.4844
92	630 - 636	631.25	635.75	677	10.5781
93	636 - 642	637.25	641.75	683	10.6719
94	642 - 648	643.25	647.75	689	10.7656
95	648 - 654	649.25	653.75	695	10.8594
96	654 - 660	655.25	659.75	701	10.9531
97	660 - 666	661.25	665.75	707	11.0469
98	666 - 672	667.25	671.75	713	11.1406
99	672 - 678	673.25	677.75	719	11.2344
100	678 - 684	679.25	683.75	725	11.3281
101	684 - 690	685.25	689.75	731	11.4219
102	690 - 696	691.25	695.75	737	11.5156
103	696 - 702	697.25	701.75	743	11.6094
104	702 - 708	703.25	707.75	749	11.7031
105	708 - 714	709.25	713.75	755	11.7969
106	714 - 720	715.25	719.75	761	11.8906
107	720 - 726	721.25	725.75	767	11.9844
108	726 - 732	727.25	731.75	773	12.0781
109	732 - 738	733.25	737.75	779	12.1719
110	738 - 744	739.25	743.75	785	12.2656
111	744 - 750	745.25	749.75	791	12.3594
112	750 - 756	751.25	755.75	797	12.4531
113	756 - 762	757.25	761.75	803	12.5469

• • • ZENITH ULTRA CATV BAND FREQUENCY CHART • • • (Continued)

CHANNEL INDICATOR	BAND	AUDIO CARRIER	SOUND CARRIER	OSC. FREQ.	DIVIDE BY 64
114	762 - 768	763.25	767.75	809	12.6406
115	768 - 774	769.25	773.75	815	12.7344
116	774 - 780	775.25	779.75	821	12.8281
117	780 - 786	781.25	785.75	827	12.9219
118	786 - 792	787.25	791.75	833	13.0156
119	792 - 798	793.25	797.75	839	13.1094
120	798 - 804	799.25	803.75	845	13.2031

HRC CATV CHANNELS

• • • ZENITH HRC VHF AND CATV MID BAND FREQUENCY CHART • • •

HRC CHANNEL NUMBER	BAND	VIDEO CARRIER	AUDIO CARRIER	OSC. FREQ.	DIVIDE BY 64	CHANNEL INDICATOR
• • • LOW BAND VHF • • •						
2	52.75-58.75	54.00	58.50	99.75	1.55859	2
3	58.75-64.75	60.00	64.50	105.75	1.65234	3
4	64.75-70.75	66.00	70.50	111.75	1.74609	4
A-8(4+)	70.75-76.75	72.00	76.50	117.75	1.83984	00
5	76.75-82.75	78.00	82.50	123.75	1.93359	5
6	82.75-88.75	84.00	88.50	129.75	2.02734	6
• • • MID BAND CATV • • •						
A-2	106.75-112.75	108.00	112.50	153.75	2.40234	0
A-1	112.75-118.75	114.00	118.50	159.75	2.49609	1
A	118.75-124.75	120.00	124.50	165.75	2.58984	14
B	124.75-130.75	126.00	130.50	171.75	2.68359	15
C	130.75-136.75	132.00	136.50	177.75	2.77734	16
D	136.75-142.75	138.00	142.50	183.75	2.87109	17
E	142.75-148.75	144.00	148.50	189.75	2.96484	18
F	148.75-154.75	150.00	154.50	195.75	3.05859	19
G	154.75-160.75	156.00	160.50	201.75	3.15234	20
H	160.75-166.75	162.00	166.50	207.75	3.24609	21
I	166.75-172.75	168.00	172.50	213.75	3.33984	22
• • • HIGH BAND VHF • • •						
7	172.75-178.75	174.00	178.50	219.75	3.43359	7
8	178.75-184.75	180.00	184.50	225.75	3.52734	8
9	184.75-190.75	186.00	190.50	231.75	3.62109	9
10	190.75-196.75	192.00	196.50	237.75	3.71484	10
11	196.75-202.75	198.00	202.50	243.75	3.80859	11
12	202.75-208.75	204.00	208.50	249.75	3.90234	12
13	208.75-214.50	210.00	214.50	255.75	3.99609	13

• • • ZENITH SUPERBAND AND HYPERBAND HRC CATV FREQUENCY CHART • • •

HRC CHANNEL NUMBER	BAND	VIDEO CARRIER	AUDIO CARRIER	OSC. FREQ.	DIVIDE BY 64	CHANNEL INDICATOR
• • • SUPERBAND CATV • • •						
J	214.75-220.75	216.00	220.50	261.75	4.08984	23
K	220.75-226.75	222.00	226.50	267.75	4.18359	24
L	226.75-232.75	228.00	232.50	273.75	4.27734	25
M	232.75-238.75	234.00	238.50	279.75	4.37109	26
N	238.75-244.75	240.00	244.50	285.75	4.46484	27
O	244.75-250.75	246.00	250.50	291.75	4.55859	28
P	250.75-256.75	252.00	256.50	297.75	4.65234	29
Q	256.75-262.75	258.00	262.50	303.75	4.74609	30
R	262.75-268.75	264.00	268.50	309.75	4.83984	31
S	268.75-274.75	270.00	274.50	315.75	4.93359	32
T	274.75-280.75	276.00	280.50	321.75	5.02734	33
U	280.75-286.75	282.00	286.50	327.75	5.12109	34
V	286.75-292.75	288.00	292.50	333.75	5.21484	35
W	292.75-298.75	294.00	298.50	339.75	5.30859	36
• • • HYPERBAND CATV • • •						
AA	298.75-304.75	300.00	304.50	345.75	5.40234	37
BB	304.75-310.75	306.00	310.50	351.75	5.49609	38
CC	310.75-316.75	312.00	316.50	357.75	5.58984	39
DD	316.75-322.75	318.00	322.50	363.75	5.68359	40
EE	322.75-328.75	324.00	328.50	369.75	5.77734	41
FF	328.75-334.75	330.00	334.50	375.75	5.87109	42
GG	334.75-340.75	336.00	340.50	381.75	5.96484	43
HH	340.75-346.75	342.00	346.50	387.75	6.05859	44
II	346.75-352.75	348.00	352.50	393.75	6.15234	45
JJ	352.75-358.75	354.00	358.50	399.75	6.24609	46
KK	358.75-364.75	360.00	364.50	405.75	6.33984	47
LL	364.75-370.75	366.00	370.50	411.75	6.43359	48
MM	370.75-376.75	372.00	376.50	417.75	6.52734	49
NN	376.75-382.75	378.00	382.50	423.75	6.62109	50
OO	382.75-388.75	384.00	388.50	429.75	6.71484	51
PP	388.75-394.75	390.00	394.50	435.75	6.80859	52
QQ	394.75-400.75	396.00	400.50	441.75	6.90234	53
RR	400.75-406.75	402.00	406.50	447.75	6.99609	54
SS	406.75-412.75	408.00	412.50	453.75	7.08984	55
TT	412.75-418.75	414.00	418.50	459.75	7.18359	56
UU	418.75-424.75	420.00	424.50	465.75	7.27734	57
VV	424.75-430.75	426.00	430.50	471.75	7.37109	58
WW	430.75-436.75	432.00	436.50	477.75	7.46484	59
XX	436.75-442.75	438.00	442.50	483.75	7.55859	60
YY	442.75-448.75	446.00	448.50	489.75	7.65234	61
ZZ	448.75-454.75	452.00	454.50	495.75	7.74609	62
AAA	454.75-460.75	458.00	460.50	501.75	7.83984	63
BBB	460.75-466.75	462.00	466.50	507.75	7.93359	64